

THE MONTHLY CHRONICLE.

SEPTEMBER, 1840.

ARTICLE XVII.

RAIL-ROADS IN ENGLAND.

It is difficult to give any satisfactory idea of the rail-roads of Great Britain, without transcending the limits which can be devoted to the subject, in this journal. Such is the magnitude and variety of these works, that it would require a large volume to give an adequate description of them. The number of railways in England, Scotland, and Ireland, which are either completed, or in the progress of execution, is more than sixty, and many of them are works of great magnitude and cost. More than forty are either completed or in partial operation, and are daily affording experimental proof of their public utility, as well as producing an ample income upon the capital invested in them.

The most important of these railways are those which form lines of communication between London and the principal manufacturing and commercial towns of the central, and northern parts of the kingdom. These are the London and Birmingham, the Grand Junction, the Liverpool and Manchester, the Midland Counties, the North Midland, and several others, which are united in forming a connected system of communication extending from London on the south, to Birmingham, Liverpool, Manchester, Leeds, York and Lancaster, and a great number of intermediate towns.

The first constructed of these rail-roads was the Liverpool and Manchester, 31 miles in length. This served, in a great measure, as the pattern railway, not only for England but for other countries, and its signal success led to the cotemporaneous undertaking of a large number of other works of great magnitude. That which was next completed, on an extended scale, was the Grand Junction. This was accomplished by a company consisting, in a great part, of the

same individuals who undertook the Liverpool and Manchester road. It unites with the Liverpool and Manchester near its centre, and terminates on the south at the town of Birmingham; its whole length, including the part of the Liverpool and Manchester traversed for the purpose of reaching either of those towns, is 97 miles.

The London and Birmingham railway, which was the next opened of these great works, is 112 1-2 miles in length, and it extends the line of communication, from the termination of the Grand Junction to London, making the whole distance from Liverpool, and from Manchester to London by this route, 209½ miles. The Midland Counties railway, 57 miles in length, has been since opened, uniting with the London and Birmingham at Rugby, and extending to Derby and Nottingham, and this line is further extended by the North Midland, 72¼ miles in length, from Derby to Sheffield and Leeds, and by the York and North Midland, extending from Leeds to York. There are besides several other railways, which form a part of this great system of communication.

The first meeting of the subscribers under the act authorizing the construction of the Liverpool and Manchester railway, was held in Liverpool, on the 29th of May, 1826. The first board of directors was then chosen. They elected Charles Lawrence, Esq. chairman, John Moss, Esq. deputy chairman, and Mr. George Stephenson, principal engineer. Some preparatory works, such as drawing chart maps, and opening the Liverpool tunnel, were commenced in the course of the ensuing summer, but little progress was made in the work until the beginning of 1827. During this year the work was carried forward with spirit. The excavation of the tunnel was prosecuted day and night. Serious obstacles were encountered in some parts, from the quantity of water, the loose nature of the earth, and the difficulty of supporting the sides and roof until the permanent arch could be constructed. A part of the tunnel was through a substantial red sand-stone, which required no props or artificial arching. To expedite the work, the tunnel was constructed in seven or eight sections, communicating with the surface by upright shafts, through which the substance excavated was conveyed away. The joinings of these sections were effected with entire accuracy. The last union between the sections was effected in June, 1828. This year was completed the driving of piles for the foundation of the viaduct over the Sankey valley. This viaduct is supported by nine arches, and the railway is carried at a level of 70 feet above the Sankey canal. For the foundation of each of the ten piers, 200 piles of 20 to 30 feet in length were driven. In 1829 the skew bridge, for carrying the Liverpool and Warrington turnpike over the railway, at Rainhill, was completed. It crosses the railway at an oblique angle of 34 degrees, the span of the arch being 64 feet. Every stone of the

arch is shaped with an angle and curve adapted to its position. In the same year the first track of the railway was laid across Chat Moss. This is a vast bog, so soft in some places that an iron rod would sink through it to a depth of 30 or 35 feet, by its own gravity. The railway floats upon the surface of this mass of soft earth, its buoyancy being supported by bundles of brushwood and heather, laid under the sleepers. For half a mile near the eastern border, an embankment of about 20 feet above the natural surface was required. In forming this embankment many thousand yards of earth disappeared, before it reached the proposed level. At length, however, the mass beneath became consolidated, and a firm embankment was completed. The railway was opened from Liverpool to Manchester on the 15th of September, 1830.

The railway in Liverpool commences at the company's yard at Wapping. It approaches the lower entrance of the tunnel, which passes under a part of the town, by a cutting 22 feet deep, and 46 feet wide. This space admits of four lines of railway, with pillars between them, which support the beams and floors of the warehouses, from which the loading is received, or to which it is discharged, through hatchways adapted for the purpose. From Wapping the railway proceeds on a level, along the tunnel, by a curve to the right, to the foot of an inclined plane, a distance of 270 yards; and thence in a straight line 1980 yards, ascending at the rate of three quarters of an inch to a yard, and making an entire ascent of 123 feet, to the mouth of the tunnel at Edgehill. The tunnel is 22 feet wide, and 16 feet high, the sides being perpendicular for 5 feet in height, and surmounted by a semicircular arch of 11 feet radius. The height from the roof of the tunnel to the surface of the ground, varies from 5 feet to 70. The whole length of the tunnel is furnished with gas lights, and the sides and roof are whitewashed to aid the effect of the illumination.

At the upper end of the tunnel, the railway enters a spacious area 40 feet below the surface of the ground, cut in the rock. From this area another tunnel 290 yards in length, leads to the station for coaches in Crown street, at the upper part of the town near the eastern boundary. Near this area are the two engine houses. At the departure of the railway from the area, it proceeds on a level to Wavretree lane, after which it descends for $5\frac{1}{2}$ miles, at a rate of 4 feet in a mile, passing through a deep marl cutting, and under several massive stone archways, which are thrown across the excavation, for the support of roads and farm crossings. It passes also through a great rock cutting at Olive Mount, 70 feet below the surface of the ground, and subsequently over the Robey embankment, 15 to 45 feet in height, and two miles in length. At a distance of seven or eight miles from the Liverpool station, you reach the foot

of the Whiston inclined plane. This plane, which is $1\frac{1}{2}$ miles in length, rises at a rate of 1 to 96, or 55 feet in a mile. From the upper termination of the plane, the railway is level for a distance of two miles. Here the turnpike road crosses the railway by a substantial stone bridge, at an angle of 34 degrees. At the termination of the level plane, commences the Sutton inclined plane, which descends in passing easterly, at the same rate and for the same distance as the Whiston inclined plane, the perpendicular ascent by one, and descent by the other, being 82 feet.

Across Par Moss an embankment is formed from the clay and stone taken from the inclined plane. To form a solid road at an elevation of five feet above the surface of the moss, a mass of earth was required sufficient for an embankment of 25 feet in height, it having settled about 20 feet before it found a stable foundation. At about midway between Liverpool and Manchester the railway passes the Sankey canal and valley, on nine arches of 50 feet span each, at an elevation of 70 feet. The railway next passes the borough of Newton on the south, crossing the valley on four arches of 40 feet span each. It soon enters the Kenyon cut, from which 800,000 cubic yards of clay and sand were removed. Near the termination of this cutting, the railway is joined by the Leigh junction railway, by which it is connected with the Bolton and Leigh line. After crossing the Brosely embankment, the railway soon reaches the celebrated Chat Moss above mentioned. The surface of this moss is of so soft and spongy a texture, for several miles, that cattle cannot walk upon it. After leaving Chat Moss, the railway passes within view of several churches and country seats of some interest, and enters Manchester through a portion of Salford, crossing the river Irwell by a handsome stone bridge, and terminates at Water street and Liverpool road, near the Albion Hotel.

From the head of the plane in the Liverpool tunnel, to Manchester, there is no inclination with the exception of the Whiston and Sutton inclined planes, greater than 1 in 880, or 6 feet in a mile. It is nearly straight. The curves seldom deviate from a right line more than 4 inches in 22 yards, forming the segment of a circle, of a radius of more than two miles. The rails originally laid were of the fish-belly pattern, and of a weight of 35 lbs. to a yard, supported at intervals of one yard, on stone blocks, each containing about four cubic feet of stone.

For a motive power in conducting the trains over the plane in the Liverpool tunnel, a stationary engine is placed at the summit which gives motion to a rope passing over sheaves or pullies along the whole ascent, to which the trains of cars are attached. The same expedient was proposed on the Whiston and Sutton inclined planes, but it was found by experiment, that locomotive engines of a greater power

than are required on the level part of the road, are fully adequate to carry over those planes any loads which there is occasion to move.

The cost of the Liverpool and Manchester railway to the 31st of May, 1830, with the estimates of certain works which then remained to be completed, was £820,000. The amount expended to Dec. 31, 1833, was £1,089,818. Since that time there have been large expenditures, in additional locomotives and carriages, in re-laying the tracks with heavier rails, and various other improvements. The present capital stock consists of 510,000 shares of £100 each; 7068 half shares, and 12,021 quarter shares, amounting to £1,163,925. The dividends have varied from 4 to 5 per cent. semi-annually, averaging $9\frac{1}{2}$ per cent. per annum. There is a provision in the act forming the company, that if a dividend be declared, exceeding the rate of 10 per cent. per annum, there shall be a reduction on the rate of tolls equal to 5 per cent. for each £1 dividend, over £10 per share.

The following table shows the operations of the road for a period of three years, exhibiting the amount of merchandise carried between Liverpool and Manchester, and between places on the way; the number of passengers; the number of locomotive trips—each trip being averaged at 30 minutes; the receipts in each department of the service; the total expenses, with the items in some of the principal branches; the net profits; and the dividends.

*Amount of transportation, receipts, and expenditures, in each half year ending**

	Dec. 31, 1831.	June 30, 1832.	Dec. 31, 1832.	June 30, 1833.	Dec. 31, 1833.	June 30, 1834.
Merch. betw'n Liv. & Man. (tons,)	52,224	54,174	61,995	68,284	69,806	69,522
“ “ places on the way, “	2,347	3,707	6,021	8,712	9,733	15,201
“ Liv. and Bolton junc. “	10,917	14,720	18,836	19,461	18,708	19,633
Coal.	8,396	29,456	39,940	41,375	40,134	46,039
Number of passengers,.....	256,321	174,122	182,823	171,421	215,071	200,676
Trips with passengers,.....	2,946	2,636	3,363	3,262	3,253	3,317
“ with goods,.....	2,298	2,248	1,679	2,224	2,587	2,499
“ with coals,† Receipts, coaching department,...	150 £58,348	234 40,044	211 43,120	“ 44,131	“ 54,685	“ 50,771
“ merchandise,.....	30,765	32,477	34,978	39,302	39,958	41,088
“ coal dep.	696	2,184	2,804	2,638	2,591	2,925
“ total,.....	89,809	74,706	80,902	86,071	97,234	94,784
Expenses—total,.....	49,026	46,658	48,278	52,900	56,350	60,092
“ maintenance of way,....	6,599	7,331	6,878	6,714	6,425	9,350
“ Locomotive,	12,203	10,582	12,646	14,715	13,965	15,641
“ carrying,	10,450	8,010	6,983	8,579	8,627	9,322
“ coach,.....	6,709	4,888	4,261	5,835	7,138	7,353
“ wagon,	979	1,006	964	1,000	1,611	1,851
“ interest,	2,737	5,966	4,555	5,367	5,140	5,546
“ stationary engine,.....	269	1,051	852	859	1,307	986
Net profit,.....	40,703	28,048	32,623	33,171	40,884	34,691
Dividend,.....	4½ pr. ct.	4 pr. ct.	4 2-10	4 2-10	4½ pr. ct.	4½ pr. ct.

* The receipts from Feb. 16, 1830, to the end of the year, gave a net profit of £14,433. The dividend was £2 per share. Half year, ending June 30, 1831, £30,314. Dividend, 4 1-2 per cent.

† Exclusive of coals brought by the Bolton engines.

Since the period embraced in this table, the business of this railway has greatly increased. It is not necessary to continue the statement in the same detail. The following table shows the amount of receipts and expenses at certain periods, as exhibited in the semi-annual statements.

<i>Half year ending</i>	Receipts. £	Coaching £	Merch. £	Coals. £	Expenses £	Profits. £	Div. pr. et.
Dec. 31, 1834,	104,809	60,292	41,197	3,408	64,552	40,346	4½
Dec. 31, 1835,	117,955	67,897	46,375	3,682	71,995	45,960	5
Dec. 31, 1836,	125,279				79,628	45,621	5
June 30, 1838,	123,610	61,786	58,122	3,711	77,054	46,553	4½
Dec. 31, 1838,	136,602	79,277	54,215	3,200	80,978	55,714	5
June 30, 1839,	123,814				75,602	48,211	4½
Dec. 31, 1839,	145,748	85,425	57,194	3,127	82,779	62,968	5
June 30, 1840,	126,474				67,003	59,471	5

The locomotive expenses in the second half year of 1834, amounted to £18,364; in the same period of 1835, £15,681; in the first half year of 1838, £22,899; and in the second half year of 1839, £26,792. The number of passengers who travelled over the railway in the year 1838, was 609,326, and the amount of fare paid by them, including receipts for parcels by the passenger coaches, was £126,746. The number of passengers in the first four months of 1839, was 185,097. This number was greater than in the first four months of 1838, by 26,414. The price paid by passengers in the first class carriages is $2\frac{2}{3}$ of a penny a mile; in the second class, $1\frac{1}{2}$ penny.

The Grand Junction railway unites with the Liverpool and Manchester near Newton, by two curved tracks, one turning towards the west, and the other towards the east. From this junction it proceeds in a southerly direction, a distance of $82\frac{1}{2}$ miles, through the counties of Cheshire and Staffordshire, to Birmingham. The largest towns which lie near its course, are Warrington and Wolverhampton. It was opened for public use on the 4th of June, 1837. We cannot give a better idea of the route, than by copying the following description of the opening, by an eye witness, which was published at the time in the *London Morning Herald*.

“ On the 4th inst. this railway was partially opened for the conveyance of passengers. It commences in Curzon street, Birmingham, at the station adjoining that of the London and Birmingham railway, and passes near Wednesbury, Walsall, Dudley, Bolston, Wolverhampton, Stafford, Stone, Eccleshall, Newcastle, the Potteries, Nantwich, Middlewich, &c., to Warrington, terminating at Newton, on the Liverpool and Manchester railway (midway.) The distance from Birmingham to Newton is $82\frac{1}{2}$ miles. From Newton, whence the train started at two minutes before seven in the morning, it arrived at the first stopping place, Warrington, $19\frac{1}{4}$ miles, from Liverpool, in 27 minutes. On leaving Warrington, a most delightful line of country was presented to the eye, while to the engineer the works forming the railway itself

were an object of admiration. The bridge of the river Mersey, with the embankments on either side, was the first object that attracted attention. The railway next passes through some deep cuttings on an ascent to Preston Brook. The cutting then becomes deeper, owing to the line running under the Duke of Bridgewater's canal. The view from the viaduct over the Weare is beautiful. The viaduct itself consists of 20 arches, and is one of the finest erections of that kind extant. The train arrived at the second stopping place, Hartford, at five minutes past eight o'clock; the distance performed by that time, $31\frac{3}{4}$ miles. There is a handsome bridge at this station, and the cutting is about 33 feet deep. The stoppage here occupied three minutes. The road on either side of the Hartford bridge is on the descent. At the end of the cutting, Vale Royal, one of the prettiest valleys in England, suddenly bursts on the eye. The railroad then proceeds through the rural districts of Cheshire, and to the passenger there is little to call forth attention until it reaches the level leading into Crewe, which is 11 miles in length. The first portion of this stage was performed rather slowly, owing to the stiffness of the rails, and the steam having been reduced by taking in water. The train reached Crewe at three minutes to nine o'clock. Crewe is $43\frac{1}{2}$ miles distant from Liverpool; it is the third station on the line. The train left there at five minutes past nine o'clock, about half an hour beyond the time fixed. There is a shed built for an extra engine, to assist in propelling the train up the Madeley inclined plane, but as yet no engine is assigned to that duty. The rise at the summit is 1 in 180. At half past nine o'clock the train passed the station house. The down train was met at Whitmore Heath, $54\frac{1}{4}$ miles from Liverpool, a few minutes afterwards. According to Birmingham time, it reached there at the half hour exactly. It ought to have arrived at fifty-five minutes past eight o'clock, so that the Birmingham, as well as the Liverpool train, was about half an hour behind the proper time. The Birmingham train carried the mail of the previous evening. The apparatus for supplying the engine with water was in an unfinished state, and considerable delay was thereby occasioned. It left Whitmore at twenty minutes to ten o'clock. We ought not to omit to mention that Madeley plane was ascended with great facility. The ascent from Whitmore was performed with astonishing velocity. The one and a half mile from the fifty-eighth mile stone, or rather board, was done in two and a half minutes—so much for railway travelling. At the Penkridge station we met the mixed train which left Birmingham at half past eight o'clock. It had taken its departure from the station house at half past ten, having done the 24 miles in two hours. The Wolverhampton station is about a mile distant from the town; an immense crowd was here collected to meet the train which arrived there at five minutes to eleven o'clock. After taking in coke and water, the train again started. After passing through a short tunnel, we entered a deep cutting, the banks on both sides of which were quite covered with spectators. From Wolverhampton to Birmingham a general holiday seemed to be observed, and the scene was highly interesting to the observed and the observers.

Tents were pitched in several fields, and parties given by the respective tenants in honor of the day. The weather was extremely beautiful, and the freedom from dust which exists on railways is another interesting feature connected with this branch of mechanics. The Newton-road station was passed at twenty minutes past eleven o'clock, and the train again entered on some deep cuttings, extending about half a mile in length. Between this and Birmingham we passed another train. The Liverpool train was at this moment proceeding with great rapidity—indeed, that observation applies generally to the whole distance on the Birmingham side of Crewe. At half past eleven o'clock the train arrived at its destination, all safe, and without an accident."

The cost of the Grand Junction railway, to Dec. 31, 1838, was £1,765,686; of which £1,091,800 was raised by subscription to the shares, and the residue by loan. The cost up to Dec. 31, 1837, was £1,607,490. The parliamentary estimate of cost was £1,040,000, which, however, did not purport to embrace any part of the proposed expenditure other than that of making the road between Birmingham and Warrington, and the purchase of the land. The items of expenditure were, for land and compensation £225,201; work of the road from Birmingham to Warrington, £1,123,928; purchase of the Warrington and Newton railway, from the company previously formed, £64,853; stations, £86,970; locomotive engines, £148,953; general charges, £93,509; and interest on loans, £22,271.

The receipts of the first six months, from passengers only, the conveyance of goods not having been begun, amounted to £116,740. The number of passengers conveyed in this period was 232,202. The expenses amounted to £60,705, leaving a net profit of £56,035, from which at the semi-annual meeting in January, a dividend of 5 per cent. was declared. In the year 1838 the number of passengers carried was 445,268, for which the amount received was £257,970. Of this number of passengers, 245,436 travelled in the first class carriages, paying a little over 2½ pence a mile. The greater part of the rest travelled in the second class, paying a fraction over 2 pence per mile, and a small number in the third class, consisting of open wagons, paying 1½ penny per mile. The whole receipts of the company in the year 1839 amounted to £425,292, of which £339,698 were derived from the fare of passengers, £7,865 for the transport of live stock, and £67,702 for the transport of merchandise, the residue being from rents and miscellaneous sources. The expenses of the year amounted to £222,806, including £73,962 for locomotive expenses, and £20,391 for repairs of way. The net income of the year amounted to £202,485. A dividend of 6 per cent. was declared from the first half year's profits, and 7 per cent. from the second. The increased produce of this year, over

that of the preceding, in the coaching department alone was £81,728, or more than 30 per cent.

It was early discovered that there was a considerable inconvenience and hazard in running the trains of the Grand Junction company over the Liverpool and Manchester railway, to complete the route, although there are two tracks, and the two railways are under the government of directors, consisting, in considerable part, of the same individuals, and consequently acting in entire concert in relation to the system of management. The directors, in consequence, recommended the substitution of a new route to Liverpool by which this objection might be obviated, and a saving of seven miles in distance might be made. The route recommended was one crossing the Mersey at Fiddler's Ferry. An application was made to Parliament for authority to make this change, but it proved unsuccessful.

The London and Birmingham railway was opened on the 20th of July, 1837, from London to Box Moor, a distance of 24 miles, and a further distance of $7\frac{1}{2}$ miles, to Tring, in October. A large stationary engine had been previously at work near Chalk Farm, dragging trains upwards of a mile by a rope, from Euston Square, over an inclined plane rising 80 feet in a mile. In April, 1838, it was opened a further distance from London to Denbigh-Hall, and from Rugby to Birmingham, and on Sept. 17th, of the same year, it was opened through the whole distance of $112\frac{1}{2}$ miles, from London to Birmingham, thus completing, with the Grand Junction railway, the line of communication from London to Liverpool and Manchester.

The parliamentary estimate of the cost of this road was £2,750,000. The actual cost, up to the 31st of December, 1839, was £5,588,540. The cost of land and compensation of damage was £687,253; the cost of works, including the road and stations, was £4,233,419; locomotive department, consisting of engines, tenders and tools, £123,768; carrying department, consisting of coaches, tenders, wagons, &c., £177,177; expenses of obtaining act of Parliament, £72,869; engineering, law expenses, salaries, office expenses, &c., £127,493, and £127,493 for interest on loans previous to the general opening.

It would occupy too much space to attempt here a particular description of this great work. It will be readily inferred from its great cost, that it is built in every respect in the most substantial and perfect manner, with little regard to the expense of excavations and embankments. The extent of these, and of the tunnelling where the heights to be passed were too great to admit of an open excavation, is very great. Kilsby tunnel is a mile and a half in length, and some of the embankments are of vast dimensions. The following description of the final opening, from a writer who was present, will give some idea of the general character of the work.

"Monday, the 17th inst. was the first day that the complete line of rail-road from the London to the Birmingham terminus was opened. The portion of the road which was traversed for the first time on this occasion, was that which extends between the old station at Denbigh hall and the station at Rugby. The station at the former place now no longer exists; but there are on this extent of 35 miles, stations at Wolverton, Roade, Blisworth, Weedon, and Crick. The first train started from the Euston square station at seven o'clock, having in the carriages the proprietors of the undertaking and their friends. The next train which was open to the public, left Euston square station at ten minutes after eight o'clock, but did not get fairly under weigh with the steam engine until twenty five minutes past eight. This train reached Birmingham, by the Birmingham clocks at the terminus, at ten minutes to two; but by the watches of those who went by it, at two minutes before two. Watford was reached in 38 minutes from the Euston station. The train halted here three minutes. Tring was reached in 73 minutes, and the train halted four minutes and a half. Wolverton, the first new station, was reached by 28 minutes past 10, then the train halted 25 minutes. At this place a great crowd of persons were assembled, and preparations were made for a rural feast and celebration of the opening of the line. Roade was reached at 17 minutes past 11. The train stopped 10 minutes at this station, which is 60 miles from London. Weedon, which is 9 miles farther, was reached at seven minutes to 12 o'clock, and Rugby, which is 83 miles from London, at half past 12. The train stopped here eight minutes. Coventry was reached at six minutes past one o'clock, and here the train remained 15 minutes. The next place was Birmingham. The portion of the line just opened, from Denbigh-Hall to Rugby, appears to be equally good with any other part of the road. It is in this division of the road, shortly before entering Rugby station, that the trains pass through Kilsby tunnel. It is one of the most extraordinary pieces of road in the whole line. The length of this tunnel is 2,400 yards, and it does great credit to the skill of Mr. Foster, the engineer by whom it has been completed. The train which left Birmingham for London at half past 12 was delayed, by some means or other, on the road, for 2 hours, in consequence of which the train next in succession, which left Birmingham at half past two, was delayed nearly two hours, when almost close to the Euston station. This last train arrived in London about 20 minutes to 10, instead of a quarter past eight, the hour stated for the arriving in the public announcements.

"It does not appear that any accident whatever occurred on the road, ineed, so excellent were the arrangements, that the possibility of accidents was provided for in every way that could be imagined. The road, as most persons know, passes through six of the most beautiful counties in England,—Middlesex, Herfordshire, Buckinghamshire, Bedfordshire, Northamptonshire, and Warwickshire, and through a line of country abounding in fine prospects, historical recollections and antiquities. One drawback to travelling by rail-road, however, is, that for many miles it is so buried between lofty embankments that nothing

can be seen but the sides of the trench, and this is more particularly the case where a prospect of the seats and parks of the gentry would be most desirable. Another disagreeable incident is the passing through the tunnels, of which in the whole line there are seven. The road is crossed by numerous bridges, all of excellent workmanship, and some of considerable elegance.

“That part of the road which has been open some time, has been repeatedly described, but that portion which was opened yesterday for the first time, is of course less known. One of the principal places through which it passes is Weedon. This place is 67 miles from London. The Roman Wallingstreet comes close to it, the rail-road of 2,000 years ago. From the rail-road the traveller looks down upon the barracks of the town, which are very spacious, containing a hospital, parade, &c. This extensive depot is a military establishment not surpassed by any in the kingdom. It is capable of receiving 200,000 stand of arms. A great quantity of warlike stores and artillery are generally deposited here. The Grand Junction canal communicates with the store houses, and close to them the rail-road passes. The Grand Junction canal is carried across the valley by means of a very noble embankment on the left.

“At Dodford, which is a little beyond Weedon, the laborers held a fete in honor of the day. There were nearly 800 persons assembled, enjoying themselves in various ways; their festivity and good humor greatly enlivened the scene. The most beautiful town, or rather city, on the whole line is, however, Coventry. The spires of St Michael's church, 300 feet high, of the Holy Trinity, and of the Grey Friars, are the great ornament of the neighborhood, and are seen to great advantage from the road. There is a splendid station here with staircases of stone, and every accommodation for the landing and departure of travellers. Taking this line of road as a whole, it is one of the most stupendous monuments of modern times, and will ultimately lead to results of which it is difficult to foretell the extent. Human labor and human industry appear to have outstripped even the operations of nature. When the celebrated Duke of Bridgewater was intersecting the country with canals, Brindley, the engineer, was asked, in his examination before the house of commons, what he supposed providence made so many rivers for, he replied, to supply the canals with water. In the same spirit it may be replied to those who ask, for what all the roads now in existence were made, they were made to bring passengers to the stations of the rail-roads, and supply customers for seats in the intermediate trains, by which they are traversed.

The number of passengers on the part of the road which was then open, up to the 1st of January, 1838, was about 150,000. From the commencement of the year to April 8th. while the trains run only to Tring, 32 miles, the daily average of passengers was equal to 244 conveyed the whole distance, and from that date to June 30, the average was 715 daily for the 77 miles then open. The receipt during these six months amounted to £41,322. The whole number

of passengers during the year, was 458,995. The rates of fare are 3½d. in the mail trains; 3¼d. in the 1st class; 2¾d. in the second class; and a little over 2d. per mile in the 2d class open cars.

The operations of this railway during the year 1839, were highly successful, and extremely interesting, as testing in the most triumphant manner, on a large scale, the advantages of this system of improvement. The receipts in the first six months, of the coaching department, including fare of passengers, and transport of horses, carriages, parcels, and mails, amounted to £248,865; and of the merchandise department to £21,276. In the second six months, the former class of receipts amounted to £299,798, and of the latter to £44,112, making a total receipt of £614,051. The expenses, exclusive of interest on loans, amounted to £243,644. This is a much smaller amount of expenses, in proportion to the receipts, than have been incurred, both on the Liverpool and Manchester, and on the Grand Junction railways. On account, however, of the heavy cost of the road, the dividends were not so large as on either of those works. The dividend of the first half year was 3½ per cent., and on the second 4 per cent. The expenses of the locomotive department in particular, which was conducted under the charge of Mr. Bury, were considerably less, in proportion to the amount of service performed, than on either of those roads. The expense on account of locomotive power, including salaries and wages in this department, coal, coke, repairs of engines and tenders, oil, tallow, pumping, &c., amounted to £54,424, which is hardly 9 per cent. on the amount of receipts. On the Grand Junction the cost of this branch of service was nearly double, in proportion to the receipts. It is, however, to be considered, that the rates of fare are considerably higher on the Birmingham, than on the two other roads, and they of course produce a higher income in proportion to the amount of work performed. The expense of locomotive power is also as low as possible, from the highly finished state of the railway track, and the low rate of gradients. The cost of locomotive power is increased on the Grand Junction, by the higher gradients, and by the necessity of dividing the trains between Warrington, and the Liverpool and Manchester terminations of the route. The aggregate expense of working, however, is considerably increased on the Birmingham road by the heavy charge incurred for the police, amounting to £16,397. The whole expenses on this road amounted to 39 per cent. of the receipts, and those of the Grand Junction to 49 per cent. The number of passengers who travelled on the road during the year, was 608,564. The average number per day, in the first six months of the year, was 1476, and in the second six months, 1855 a day. The average distance travelled by each passenger was 65 miles. The daily number of passengers was equal to an average of 857 through the whole

112 miles, in the first half year, and equal to 1,081 in the second half.

The income of these three railways the present year has been still greater than during the last. The receipts of the Liverpool and Manchester in the first six months, amounted to £126,474, its expenses to £67,003, and net profits to £59,471, and a dividend was paid of 5 per cent.

The receipts of the Grand Junction, during the same period, were £165,060 from the coaching department, £37,967 for freight of merchandise, and £4,450 for the transport of live stock, making a total of £287,487, and exhibiting an increase of £18,524, as compared with the receipts of the preceding year. There was at the same time a diminution of the expenditure, compared with that of the same period of last year,—that in the locomotive department being reduced from £35,450 to £30,615, and the whole charges of the half year, exclusive of interest on loans, to £94,661, which is equal to 45½ per cent. on the aggregate of receipts. A dividend was declared of 7 per cent. The Grand Junction company has, by authority of an act of parliament, made a purchase of the Chester and Crewe railway. This road is nearly ready to be opened, and it is to be worked as a branch of the Grand Junction road, 18 miles in length, terminating at the town of Chester. The terms of purchase were, that the proprietors of the Chester receive for each share of their original stock, on which £50 have been paid, one quarter share, equal to £25 in the Grand Junction. The number of £50 shares was 5,000, and the purchase makes an addition of £125,000 to the capital stock of the Grand Junction. In consequence of this purchase, as the new proprietors will participate in the next dividend of profits, a further dividend of surplus profits, of 3-4ths of 1 per cent. was declared, making 14¾ per cent. profit for the last 12 months. The company at their annual meeting in August, voted to create new stock to the amount of £440,675 for the payment of their debt, to be taken by the previous stockholders, in the proportion of one quarter share to each whole share already held by them.

In travelling by the line of these three railways, passengers entering at one end of the line are carried through to the other, usually, without any change of the carriages. The carriages are drawn from London to Birmingham by the locomotives of the London and Birmingham railway, and from Birmingham to Liverpool and Manchester, by those of the Grand Junction. Seven trains start daily at different hours from each end of the line, and pass through to the other, two of which travel chiefly in the night. A part of these consist of first classes only, and part have first and second classes, and are called mixed trains. The passage of 209½ miles is made by the first class trains in ten and a half hours, viz: from London to Birming-

ham in $5\frac{1}{2}$ hours, and from Birmingham to Liverpool and Manchester in 5 hours. The mixed trains occupy $11\frac{1}{2}$ to 12 hours. There are two mail trains, one of which leaves London at $8\frac{1}{2}$ P. M., and the other at $9\frac{3}{4}$ A. M.

The trains are frequently so large as to require two or three engines. The usage on the London and Birmingham railway is to put on a second engine, whenever the number of carriages required to take all the passengers exceeds 12, and a third, if they exceed 24. The practice of uniting several engines in the same train is adopted, because it is deemed hazardous to despatch successive trains at shorter intervals than half an hour, as in case of accident to the forward trains, while passing through the tunnels, where on account of the smoke it is impossible to see but a few feet ahead, they would be liable to be run down by those which follow. About half an hour is required for the smoke to make its escape. The tunnels are lighted with gas. On the Liverpool and Manchester railway, there are six trains daily, which leave each end of the line for the other, at different hours, from 7 o'clock in the morning to $7\frac{1}{4}$ in the evening.

In connexion with these principal railways, on the north are the North Union, from the termination of the Grand Junction, 22 miles to Preston, and the Lancaster and Preston, which extends the line $19\frac{1}{2}$ miles to Lancaster. The mail is carried on this line to Lancaster, and three trains of carriages run over the whole line daily, two of them without change of carriages from London to Lancaster, a distance of 236 miles.

From Manchester the line is extended north-eastwardly by the Manchester and Leeds railway, 50 miles to Leeds; by the Leeds and Selby $20\frac{1}{2}$ miles, and by the Hull and Selby 30 miles to Hull, at the mouth of the Humber. The Manchester and Birmingham, which is but partially opened, is destined to form, in connexion with the Grand Junction, a more direct route from Birmingham to Manchester.

The London and Birmingham is also extended by the Midland Counties railway, from Rugby, 57 miles, to Leicester, Derby, and Nottingham, and from Derby by the North Midland Counties, 72 miles to Leeds and York, forming a union with the Leeds and Selby line above mentioned. This line is further extended by the Great North of England railway, not yet completed, 74 miles to Newcastle. The Birmingham and Derby Junction railway extends from Derby to the London and Birmingham, uniting with the latter 9 miles from Birmingham, and forming another route towards London. There is also another railway 52 miles in length, leading from Birmingham to Gloucester, by means of which the travel of a populous tract of country is brought over the London and Birmingham to the metropolis. This latter is but partially opened.

On the north, the Great North of England railway unites with the Newcastle and Carlisle, a railway 61 miles in length, which is in full operation, running from one side to the other of the kingdom. There are besides, in connexion with this great system of works, several railways of inferior dimensions. In the neighbourhood of Newcastle there is a large number of railways, devoted chiefly to the coal trade. Among them is the Stockton and Darlington, which is crossed by the Great North of England. This was the first of the English railroads, of any considerable extent, which was opened to public travel. It is still one of the most profitable railways in England, its income being chiefly derived from the transport of coal.

Besides the grand series of railways which we have already described, and which are all united in forming one system of communication, the next in importance is the Great Western, extending from London to Bristol, a distance of 118 miles. This magnificent work deserves to be fully described in a separate article. It is undertaken on a scale of greater dimensions than any other railway in the world. It is constructed in a mode differing in several respects from any of the other works. It has a width of seven feet between the rails, while most of the railways have a width of 4 feet 8½ inches only. The rails are laid in a manner differing from that adopted on the other railways. The engines are constructed with wheels of much greater diameter than the engines in common use, with a view of adapting them to more rapid travelling. Portions of this railway have been opened at different periods, extending at present from London to near Farrington, 63 miles, and also from Bristol to Bath, 12 miles. It is anticipated that it will be opened the present autumn over a further distance of 12 miles to Swindon, when there will remain 30 miles more, which it is anticipated will be completed in the course of the next summer.

The amount expended on this railway up to the 1st of July last, was £4,530,160. The capital stock consists of 25,000 shares of £100 each, the same number of £50 or half shares, and 37,500 £20 shares, making in all £5,750,000. On the £20 shares, £4 only have been called in. The receipts of revenue from the coaching department during the 6 months ending June 30, amounted to £89,937, and the expenses to £43,749, showing a profit of £46,188. No dividend has yet been made, the profits having been applied to the payment of interest on loans. During the six months above mentioned, the whole number of passengers conveyed was 378,786. During the three first months the railway was open only 31 miles to Troyford, in the next two months it extended 36 miles to Reading, and in the 6th month, it was open 56 miles to Steventon. The number of passengers, and distance travelled, was equal to an average of 1,171 miles daily for the whole distance. Since the open-

ing to Farrington, which took place in July, and from Bristol to Bath, on the 31st of August, the receipts are considerably increased.

In connexion with the Great Western railway, another work is now in progress for extending the line from Bristol to Exeter, a distance of 76 miles, in a direction towards Dartmouth, the port selected for the West Indian and Mediterranean steam packet station. The remaining distance from Exeter to Dartmouth is but 31 miles. This work is already considerably advanced. The capital consists of £1,500,000. The sum of £516,939 has been already expended, and it is estimated that the whole work will cost £1,900,000, or £2,000,000. The directors have contracted with the Great Western Company to complete the road to Bridgewater by the 1st of June next. A contract has been entered into between the two companies, by which this railway is leased to the Grand Junction Company for a period of 5 years, from its entire completion to Exeter, at £30,000 per annum, together with a farthing a mile for each passenger, and each ton of merchandise conveyed. This lease was ratified by the Bristol and Exeter Company, by a vote of 95 proprietors and 1,580 votes, in favor of it, and 79 proprietors and 888 votes against it.

Another railway is also in progress, in connexion with the Great Western, called the Cheltenham and Great Western Union, extending from Swindon to Gloucester and Cheltenham. This railway is 42 miles in length, and the work upon it is so far advanced, that it is expected to be completed by the spring of 1841. An agreement has also been entered into for a lease of this railway to the Great Western. These arrangements for the lease of the minor establishments to the greater are obviously advantageous, if the terms can be adjusted on just principles, as it admits of their being conducted with greater efficiency, and under a uniform system of management.

Another independent line of railway, leading from the metropolis, is the London and Southwestern. This railway begins at the Nine Elms near Vauxhall Bridge, and runs through the counties of Surrey and Hampshire, to the port of Southampton, a distance of 77 miles. The cost of the work, up to the 30th of June last, amounted to £2,141,030. The principal items of expenditure were for land and compensation £291,200; for works, including cuttings, embankments, bridges, buildings, drains, and fencing, £1,114,605; for rails, chairs, and sleepers, £340,006; engines and carriages, £140,325; wagons and tools, £59,556; surveying and engineering, £33,448. It is computed that a further expenditure of near £100,000 will be necessary for additional works, and for the completion of the Gosport branch. The railway was opened through to Southampton, on the 11th of May last, having been previously in operation for some portion of the distance, on the London extremity.

The receipts of income for the first six months of the year, during 50 days of which only, the whole road was open, amounted to £88,708. A branch railway, extending from Southampton to Gosport, on the western side of the harbour of Portsmouth, $15\frac{3}{4}$ miles in length, is in progress, and it is anticipated that it will be opened by the 1st of May next. Southampton is a station for a line of steam packets to Havre, and it is anticipated that the travel on this line will be considerably increased, on the opening of the railway between Paris and Rouen. Portsmouth is the port where ocean bound steamers from London usually stop to receive their passengers.

Another distinct series of railways, leading from the metropolis, consists of the London and Greenwich, the London and Croydon, the London and Brighton, and the Southeastern, the latter terminating at Dover. The first constructed of these, and that by which the others obtain access to the heart of the city, is the London and Greenwich. This is a magnificent work of a peculiar character, which deserves a more full description than we can here give it. It is $3\frac{3}{4}$ miles in length, commencing very near the southern extremity of London Bridge, and extending through a populous part of the city to Deptford and Greenwich. Its chief peculiarity consists in its being raised to an elevation of 22 feet from the ground, on arches of stone or brick masonry, more than 900 in number. By this viaduct the railway is carried over the streets which cross its course, and the arches, which are each 15 feet in width between the walls, are occupied for dwelling-houses, shops and other uses. A width of 75 feet is taken for the railway through its whole length, but 26 feet only are occupied by the arches. The dampness of the arches has interfered with their being occupied for purposes of habitation. This objection has been obviated in part by a covering of asphalte. There are two lines of rails. The trains follow each other at intervals of 15 minutes, each way, from 8 o'clock in the morning to 10, and sometimes 12 at night, except in the winter, when they travel less frequently. The passage is made in 15 minutes. Four and six wheel locomotives are used. The latter are now preferred. The common trains consist of 5, 6, or 7 carriages, but they are sometimes, on holiday occasions, increased to 13. There are two classes of carriages; in the first the fare is 1s., in the second, 8d. Until Dec. 1838, the fare in the second class was 6d.

The original capital of the company was £400,000, this being the estimate of the cost of the work. This was found insufficient and a further amount of £150,000 in shares was raised, with £150,000 by loan. The amount expended up to May, 1839, was £640,419, and it was estimated that £60,000 more would be required. At a distance of $1\frac{3}{4}$ miles from the London terminus, the Croydon railway unites with the Greenwich. On experiment of the union of the

two lines of railway on the same track, although this track is double, it was found that there was danger of collision between the engines of the two companies, especially as the travel of the Croydon road was about to be increased, by the union with it of the Brighton and the Southeastern roads. The accommodation at the station was also found insufficient. In consequence, on application to Parliament at the last session, two acts were passed, by virtue of which the Greenwich Company is required to widen its road, and build two additional tracks from the point of junction to London Bridge, to be completed within two years, and also to furnish room to the Croydon Company within 18 months for a separate depot station, measuring 50,000 square feet, according to a plan agreed upon, and the surface to be raised to the level of the railway. This station is to be assigned to the Croydon Company, in exchange for that which it now occupies. In consideration of this additional accommodation, the Greenwich Company is to receive from the Croydon 4½d., instead of 3d., the sum previously paid by contract, for every passenger carried over this part of the road by the latter. The Croydon Company is to furnish accommodation to the Brighton and Southeastern Companies. The London and Greenwich railway was partially opened in February, 1836. It was further opened 3 miles to Deptford, Dec. 14, 1837; and through the whole length to Greenwich, Dec. 24, 1838. The whole receipts to May 1839, amounted to £105,998.

The number of passengers conveyed on the road in 1838 was 1,544,266, and the amount of receipts £39,180. The number of passengers in 1839 was 1,364,525, and the amount of receipts £45,586. The reduction in the number of passengers was probably owing to the increase of fare in the second class carriages.

The Croydon railway, from the point where it leaves the London and Greenwich, extends southwardly a distance of nearly nine miles to the town of Croydon, making its whole length from London Bridge 10½ miles. This road was very expensive, especially in the item of land and damages. The cost of the nine miles was £660,000. In many cases it was necessary to resort to juries for the assessment of damages. The route interfered with the Croydon Canal, and an attempt was made to make an amicable arrangement with the Canal Company for the purchase of it. It was supposed that this might be done on moderate terms, as the canal had been established 35 years, and owed money on bond, and had never paid any dividends on the shares, or interest on the bonds. The railway company however, offered £18,000, which offer was refused, and on going to a jury it was compelled to pay, including expenses, £45,000. It was at first proposed that the railway should follow the route of the canal, but this course was abandoned for one more direct. The depot station at the

London terminus, now to be exchanged with the Greenwich Company, cost the Croydon Company £195,000.

The number of passengers carried on the Croydon railway the first year was 553,720, and the amount of receipts £32,838. From this sum the amount of £5,725 was paid in tolls to the Greenwich Company. The expenses of the year, exclusive of maintenance of way, amounted to £22,187. The expenses will doubtless be less and the receipts much greater, when the road is worked in connexion with the Brighton and Southeastern lines.

The Brighton railway extends from the termination of the London and Croydon to Brighton, a distance of $40\frac{1}{2}$ miles, making the distance from London, over the Greenwich, Croydon, and Brighton roads, 51 miles. There is in addition a branch from Brighton to Shoreham, which is 6 miles in length. This branch has been in operation since the 13th of May last, and is the only part of this railway which is yet open. A great advance, however, has been made in the work of the main road, and a portion of it will be opened the present autumn. More than 6,000 men are now at work upon it, and it is anticipated that the whole line will be opened in the autumn of 1841. The amount expended, to the 30th of June last, was £1,166,000, and it was then estimated that the work might be completed at an entire cost of £1,800,000. The sum then expended for land and compensation was £350,423. The receipts of the Shoreham branch from the 13th of May to the 30th of June, amounted to £1,191.

The Southeastern and Dover Railway Company is organized with a capital of £1,400,000, and the work is going on with spirit. The length of the line is 67 miles, and, as well as the Brighton, it will unite with the Croydon road, and will share in the accommodation to be afforded for a depot station at the termination of the Greenwich road. This railway will afford the shortest route to the coast of France, the passage from Dover to Calais being only 18 miles—that from Brighton to Dieppe, 75, and that from Portsmouth to Havre, 90. It is anticipated that a railway will be constructed from Calais to the Belgian frontier and Lille, and thence to Paris.

Another and distinct line of railway leading from London, is the Eastern Counties. This railway commences in the northeasterly part of London, at Webb's square, on Shoreditch street, and runs between Bishopgate street without, and Shoreditch Church. The route was obtained, by pulling down about a mile of wretched houses, to the Cambridge road, near Whitechapel Turnpike gate, and passes through Bethnal Green and Spitalfields. It proceeds thence to Chelmsford, Colchester, Ipswich, Norwich and Yarmouth, its whole length being 126 miles.

This railway, after encountering some serious difficulties, is so far advanced, that it has been recently opened from Shoreditch, in London, to Brentwood, a distance of $17\frac{1}{2}$ miles. It is anticipated that it will be completed as far as Colchester, 51 miles, in another year. That part of the railway which is within the metropolis is supported upon a line of 160 bridges and arches of from 36 to 62 feet span each. This railway differs from most of the other railways in England, in being laid with a width of 5 feet between the rails. The rails are laid in a manner similar to those of the Great Western railway. The rails are unusually heavy, and the sleepers, which are of wood, are placed five feet apart. The driving wheels of the engines are six feet in diameter. The cost of the work thus far has greatly exceeded the estimate, especially in the prices demanded for land. The estimate of this charge for the whole line was £200,000, and the company has already paid and engaged to pay, on less than half the line, extending four miles beyond Colchester, £650,000. The whole amount expended, up to the 4th of July last was £1,240,000. The company has been subjected to a singular and tedious law suit, on a rule for a mandamus from the Court of Queen's Bench, to compel the company to proceed simultaneously in purchasing the land for the whole route from London to Yarmouth. The decision of the Court, after a long argument, was in favor of the company. The proceeding was the more embarrassing, as the capital of the company is insufficient for the completion of the whole line, and the shares are at a great discount in the market. It is estimated that the whole cost of completing the road to Colchester will be £2,250,000. The estimate of annual receipts, when the railway shall be completed to Colchester, is £250,000.

The Northern and Eastern railway unites with the Eastern Counties near London, and runs in a northerly direction towards Cambridge. It was originally proposed that it should commence at Islington, having an independent terminus near London, and run northwardly as far as York. But the project having been reduced in its dimensions, to a line of 29 miles, terminating at Bishop Stratford, a contract was entered into with the Eastern Counties Company to make use of a part of its terminus, for which it pays an annual rent of £7,000, and to use its tracks for a distance of three and a half miles to Angel-lane near Stratford, for which it has a stipulated toll on all the passengers, it being agreed that the company owning the track shall have the power of fixing the times of arrival and departure of the trains. At the outset from the city station there are four tracks, two for each company, which, at the distance of a quarter of a mile unite in two, passing over the viaduct supported on arches above described. By this arrangement the com-

pany made a saving of £300,000, in the expense which would have been necessary in establishing a separate terminus, less central than that now obtained. This railway was opened from Shoreditch to Broxbourne in Hertfordshire on the 15th of September instant, a distance of $19\frac{1}{2}$ miles. One track only is yet laid, except for a short distance from the junction. It passes through an even country, the gradients are slight, and there are no tunnels. The rails are laid upon sleepers of wood, and the motion of the carriages is described as easy and agreeable. The toll paid to the Eastern Counties railway is 4d. for each passenger. Six trains a day run from Shoreditch to Broxbourne.

Besides these lines of railway leading from different points in London to remote parts of the country, there is one for the exclusive accommodation of the city, called the London and Blackwall railway. It is on the north side of the Thames, and leads at present from a point on the Minories, near the Tower, in an easterly direction, $3\frac{3}{4}$ miles to the East India docks at Blackwall. It is to be extended to a still more central point in the city, at Fenchurch street. It serves for the accommodation of not merely that portion of the population who otherwise would walk, but for those who have been accustomed to land from steamboats at various points near the London bridge. Steamboats, by landing their passengers at the Brunswick wharf at Blackwall, avoid the most thronged part of the river, and a circuitous navigation of six miles. Some of the steamboats have already adopted this place of landing, by which they save about three quarters of an hour in time. From the denseness of the population in the vicinity of this railway, the number of passengers is very great. Like the other railways in London, it is in the greater part of its course of such an elevation, being supported on arches of masonry, as to admit of its passing over the streets which cross its course, without interrupting the travelling. The breadth of the viaduct on top is 28 feet to the outside of the walls, and 24 feet in the clear. The width between the rails is five feet and one inch. The arches are occupied for various purposes, being covered on top with asphalte, to prevent the percolation of water. In one instance, a suit of them, connected by doors through the piers, is occupied for a charity school. The railway has a gradual descent towards Blackwall, and at the West India docks, the arches are discontinued, and the road is conducted upon an embankment, and terminates in a shallow cutting near the Brunswick wharf. The work not being yet finished, the cost is not ascertained. The amount of disbursements to the 30th of June last, was £643,342. The trains began to run on the 6th of July last on one line of rails, at intervals of half an hour, from each end of the line, and on the 3d of August, on the second line. Trains now run every quarter of an hour, stopping at the sta-

tions at Stepney, Limehouse, the West India Docks, and Poplar. Locomotive engines are altogether dispensed with. The method of working and the railway itself, are thus described by the *Railway Times*.

"The trains are propelled to Blackwall by means of two stationary engines of 120 horse power each, which are worked in shafts sunk into the earth to the right and left of the lines. To these engines, drums are attached, each of which is of the ponderous weight of 43 tons, and 22 feet in diameter. A tail rope is fastened to the drums, which is wound and unwound at each end by the stationary engines. As the train proceeds to Blackwall the drums at the London terminus unwind the rope by which the carriages are to be again drawn to London; and to prevent the rope flying across the sheaves in which it runs, too rapidly, and thus becoming entangled in consequence of no weight being attached to it, an ingeniously contrived brake is placed on the platform by the side of the railway, at which a man is employed to regulate the unwinding of the rope. The rope is not an endless one, similar to that employed at the Euston Square station of the Birmingham Railway. It was manufactured by Sir Joseph Huddart & Co., of Limehouse, and cost upwards of £1,200. The "drums" take eighty turns to every mile of the ropes, each of which is three miles and a half in length.

"The electric telegraph is the next object of attraction, and it is enclosed in a neat mahogany case, so far as it is seen above the ground. A small bell announces when the train is about to be put in motion. The telegraph is the invention of Professor Wheatstone and Mr. Cook, and enables parties at each end of the railway to hold conversation with each other with the most perfect facility. At each end of the intermediate stations one of the telegraphs is placed to enable the servants of the railway to communicate with the engineers at the termini. Notice of any impediment or casualty may be given at an intermediate station to one of the termini, and thence conveyed to the other end of the line in the short space of three seconds.

"The rails are laid upon wooden sleepers, and the gauge is five feet, being the same width as the Eastern Counties Railway. The sheaves in which the ropes run, are in the centre of the rails, and the lines are two in number, with the necessary junctures at the termini and stations, but detach and attach, by means of a rope and iron pin, the several carriages marked for their respective places of destination, while the main train is still proceeding onwards. The Blackwall terminus is roofed in a light and elegant manner, and every precaution appears to have been taken to preserve the carriages and protect the travellers from the weather at inclement seasons. At the London terminus the roof is only temporary, as it is intended to complete, as soon as possible, the remainder of the line to Fenchurch Street, where a grand terminus will be erected. Adjoining the Blackwall terminus, capacious offices and store-rooms have been built immediately fronting the river, the Brunswick wharf and property belonging to Sir Robert Ingram being purchased for that purpose.

"The architectural part of the railway is neat and unostentatious, and was designed by Mr. Wm. Tite, president of the Architectural Society. The line proceeds on a series of arches from the Minories to the West India docks, across the Regent's canal and the river Lea. The span of the arches crossing the canal and river is from 30 to 40 feet, and from the West India docks the line runs upon an embankment. The difference in the level of the line from one end to the other is 18 feet. The three intermediate stations, namely, the Stepney, the Limehouse, and the Marsh, are exceedingly neat externally, and conveniently fitted up internally, for passengers who have to wait for the trains.

"The railway is fenced in with a light and ornamental iron palisade, which is materially better than the walls of the Greenwich, as it prevents a reverberation of sound, and consequently on the Blackwall railway the passengers are not subject to annoyance, from a constant and deafening noise. The ironwork also presents a more pleasing view to the eye. Mr. Jackson, the builder, had the contract for the London end, Mr. Webb for the centre, and Messrs. Pete & Grissell for the Blackwall terminus of the railway. The length of the railway, at present, is three miles and three quarters, and when it is carried on to Fenchurch Street, it will be about four miles. The stationary engines, it was said, cost about £30,000. The carriages are of a deep blue color, pilked out with gold, and the panels bear the city arms, surmounted by a steam vessel, the whole encircled by the words, "The London and Blackwall Railway Company." The first class carriages are of the usual description, except that there are no elbows to the seats. They are each divided into three compartments, and are intended to hold 32 passengers. The fare to either of the stations will be sixpence by the first class, and three pence by the second class. The second class carriages are of the same construction as those on the Manchester and Leeds railway, and are termed by Engineers "Stand-ups," there being no seats to them, and the passengers having to stand during the journey. These carriages have been adopted in order to save space, as it is anticipated a great number of persons will travel by the second class in consequence of the low fare. Mr. Wright of Gray's Inn, built the carriages.

"The guards and servants of the company are dressed in blue, braided with white, and the directors have contracted with Colonel Rowan to supply a sufficient number of the Metropolitan police to watch the works. The company will not have a police of their own, as they express an opinion that, by employing the Metropolitan police, they can have any number of men when necessity requires extra constables. The weight of the railway carriages is estimated at five tons each, exclusive of passengers."

The terminus of the railway at Brunswick wharf, is covered by an iron roof, and adjoining it is a large building for the offices, in a showy style of architecture, which forms a prominent object in the view from the river. The Brunswick wharf admits of the landing

of passengers from steamers of the largest class, at all times of the tide. The journeys from one end of the line to the other occupy on an average not more than ten minutes. There are two engines at each end of the line, those at the Minories, which are larger than those at the wharf, on account of the greater elevation of that end of the line, and the consequent ascending grade in that direction, being each of 112 horse power. Those at Brunswick wharf, are of 70 horse power each. There are two ropes to each line of railway, one to draw the trains in each direction. The dimension of the ropes is $5\frac{1}{2}$ inches. The pullies over which the rope passes are placed along the centre of each railway track, 30 feet apart. They are of 30 inches diameter, and 8 inches wide across the sheave. The rim is lined with rope matting, to prevent a noise from the rapid motion of the rope passing over them. The pullies on the curved part of the line are of larger diameter on one side, than on the other. The rim on each side of the pullies, is shaped like the outside of a large bell. The experiment of working the trains in this method appears to have been entirely successful. It is found to admit of the running of a greater number of trains, and of stopping with less loss of time at the intermediate stations, than would be practicable if locomotive engines were used. The amount of travelling is already very great, and on the establishment of a more central terminus, and of lines of communication in connexion with the lower terminus, there will doubtless be a large increase. From the 6th of August to the 10th of September, the number of passengers was 482,104, or an average of 7,300 a day, although during half the period only one track was open. The amount of receipts was £7,218, making a daily average of £109. The rates of fare are very low, compared with those of most of the English railways, being but half, and the second rates less than half those of the Greenwich railway, which is of about the same length. The average number of passengers on the London and Greenwich, during the five weeks ending Sept. 10, was 4,435 per day, and the average receipts £144, the difference in numbers being doubtless owing in part, but not entirely, to the difference of fare.

In addition to the railways already described, there are others of less magnitude, but some of them of considerable importance. We cannot notice them all here. The Chester and Brickenhead deserves to be briefly mentioned. It is 16 miles in length, and leads from Chester to Brickenhead, on the south side of the Mersey, opposite to Liverpool, with which town it communicates by a steam ferry. Five trains run daily between the two termini. The fares, including ferry, are in the first class train, 4s., and second class, 2s. 6d. On two days in a week there is an additional market train, on

which there is a third class carriage at 1s. 6d., with 6d. for each basket or package of fruit not exceeding one cwt.

We intended to have presented some general remarks upon some of the effects, already perceptible, of this magnificent system of internal improvements, and also upon the character of the English railways compared with the best constructed works of the same description in this country, as well as upon the rates of fare, the speed of travelling, and several other topics. But the length, to which this article has grown, obliges us to hasten to a conclusion. We barely remark upon the character of the English railways, that most of them are much more expensive in their construction than any which have yet been built in this country. This difference of cost arises chiefly from two causes, viz., the greater cost of land in England, and the greater expense which has been incurred there in reducing the gradients, by expensive cuttings, tunnels and embankments. There is also there a much greater expenditure on the depot stations. The first difference is the necessary consequence of the greater wealth and population of that country, and the disadvantage is much more than made up from the greater amount of business on the roads, arising from the same causes. The other difference undoubtedly indicates a structure of an inferior kind in this country, yet it must be remarked that this inferiority, when we speak of the railroads of New England, and the other well constructed works of this country, is by no means proportioned to the difference in cost. It is perhaps a question whether the English engineers have not given an extravagant valuation to the desideratum of a level line of railway, and to the superior advantage of extremely low gradients. We cannot undertake to judge, in any particular instance, without a much more full knowledge than we can be supposed to have in this country, of the expediency of tunnelling the line, or of reducing it by very costly cuttings and embankments, in comparison with the alternative of increasing the gradients, and carrying the line of railway nearer to the natural surface of the earth, and thereby making a great saving of cost. But it seems not improbable, that on some of the costly routes in England, a very great saving of expenditure might have been made by a moderate increase of the gradients, without any corresponding diminution of the value of the road. Experience has shown, that a moderate inclination is an obstacle of a much less serious nature than it was once esteemed, and although any inclination is doubtless a deformity, it may be attended with the advantages in addition to the saving of expense, of facilitating a thorough drainage, and of rendering the route much more agreeable and attractive to the traveller. The tunnels on the English roads, while they prove the almost entire disregard of expense in obtaining what was deemed the most eligible line of road, are yet a great annoyance to the traveller. The course of the London and

Birmingham railway, for example, is for three miles and three quarters under ground. To substitute for these damp, dark and smoky avenues, a route upon the surface of the earth, open to the view of the fine country through which they pass, would undoubtedly be an object advantageously purchased, at the cost of a slight increase of inclination, requiring some additional locomotive power. It is to be presumed however, that all these considerations were weighed by the skilful engineers who constructed this road, and that they have adopted the line best adapted to the immense traffic on that line, although a very different one would have better suited a line of less travel.

It ought to be remarked that in most cases in this country, where high gradients occur, they have been admitted not merely with a view of saving expense, but from a sterner necessity, arising from the face of the country being such, that no degree of labor could reduce it to near a level. Between Worcester and Brookfield, for example, there is a rocky summit to be passed, some 500 feet in height, the base of which is 10 or 12 miles in width. It would be idle to think of reducing such a route to near a level, by deep cutting and tunnelling. The only alternative was between having no railway, and having one with inclinations of forty or fifty feet in a mile. The experiment has been tried, of a railway of this description, and so far as the pleasure of travelling is concerned, it is much better, than if it had been made to penetrate the bowels of the earth, and the additional cost of motive power is by no means a formidable item.

In the rates of fare on the English railways there is a great variety. The acts of incorporation fix a maximum rate of toll for passengers and freight, but these rates were fixed, for the most part, on the supposition that the proprietors of the roads would furnish only the use of the road, for a toll, to carriers, who would undertake the business of transportation at rates fixed by themselves, among whom there would be a competition which would secure the public against extravagant charges, for the part of the service performed by them. This method of operation has been found impracticable, or at least highly ineligible, and the railway companies are in all instances the carriers, except in some few, where a railroad is leased by the company owning it, to another company, which is the owner of an adjoining railway. Where the rates are limited by the acts of Parliament, the actual rates are in general below that limit. On many of the roads there have been changes of the rates. The following table shows the actual rates, according to the latest information which we have seen. The first column of figures shows the length of line now open. The second shows the fare through the line in first class carriages, given in shillings and pence sterling. Where two sums are given, in this column and in the fifth, the first is the price charged in the mail train. The fourth column shows the fare in the third class

carriages, where such a class is run. The carriages of this class are open wagons. The fifth, sixth and seventh columns, show the several rates of fare, given in pence, and hundredths. The last column shows the fare per mile, in the first class cars, given in cents and hundredths of our money, for convenience of comparison with the rates on railways in this country.

Name of Railway.	Length. Miles.	Whole Fare.			Fare per mile.			
		First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	First class
		s. d.	s. d.	s. d.	s. d.	d.	d.	cts.
London and Birmingham,...	112½	{ 32 6 30 0	25 0	20 0	{ 3.46 3.20	2.66	2.13	6.92 6.40
Grand Junction,.....	97½	23 0	17 0	11 0	2.83	2.09	1.35	5.66
Liverpool and Manchester,...	31	6 6	6 0	4 6	2.51	2.32	1.74	5.
Great Western, July,.....	56	12 6	8 6	5 0	2.68	1.82	1.07	5.36
South Western,.....	76	{ 20 0 18 0	12 0	7 0	{ 3.30 2.84	1.89	1.10	6.60 5.68
Manchester and Leeds,.....	13½	4 0	2 6	1 6	3.55	2.22	1.33	7.10
Hull and Selby,.....	30	4 6	4 0	2 6	1.80	1.60	1.00	3.60
Leeds and Selby,.....	20	4 0	3 0		2.40	1.80		4.80
North Midland,.....	72	18 0	12 0		3.00	2.00		6.
Birmingham and Derby,.....	38½	10 0	7 0	5 0	3.11	2.18	1.55	6.22
Newcastle and Carlisle,.....	61	{ 11 0 10 0	8 6	7 6	{ 2.16 1.96	1.49	1.47	4.32 3.92
Glasgow and Ayrshire,.....	14	2 6	1 10	1 4	2.14	1.57	1.14	4.28
Manchester and Birmingham,...	5½	1 6	1 0	0 6	3.27	2.18	1.09	6.54
Birmingham and Gloucester,...	36	8 0	5 6	3 6	2.66	1.83	1.16	5.32
Lancaster and Preston,.....	20	5 0	3 0		3.00	1.80		6.
Preston and Wyre,.....	19	4 0	3 0	2 0	2.52	1.89	1.26	5.04
Manchester, Bolton & Bury,...	10	2 6	1 6		3.00	1.80		6.
Stockton and Darlington,...	25				2.00	1.50		4.
London and Brighton,.....	5½	{ 1 4 1 0	0 9	0 6	{ 2.90 2.18	1.63	1.09	5.80 4.36
London and Croydon,.....	10½	2 0	1 6		2.28	1.71		4.56
London and Greenwich,....	4	1 0	0 8	0 6	3.00	2.00	1.50	6.
London and Blackwall,.....	3½	0 6	0 3		1.71	0.85		3.42
Eastern Counties,.....	18	4 6	3 0	2 3	3.00	2.00	1.50	6.
Northern and Eastern,.....	19½	3 6	2 6	1 6	2.37	1.62	.87	4.75
Chester and Brickenhead,...	16	4 0	2 6	1 6	3.00	1.87	1.25	6.

It will be seen from the above table that the average of the first class rates is a little over 5 cents a mile, which is higher than the average rates in this country. The lowest of these rates is 3.42 cents on the London and Blackwall railway, which is a fraction above the first class rate on the Boston and Worcester railroad in this country—that being 3.33 cents per mile.

The usual rates of speed on some of the railways have been already stated. The maximum rates obtained on special occasions, are of course much higher. The following statements are deserving of notice. On a recent occasion in July last, a special train was arranged on the London and Birmingham railway, for the purpose of conveying the Queen Dowager with her suite on an excursion into Derbyshire, passing over this railway as far as Rugby. The train, which consisted of eight carriages, five of which were private car-

riages on railway trucks, left London at 25 minutes past 10 o'clock, stopped four times on the route, causing in all a delay of 20 minutes, and arrived at Rugby, 83 miles, at 21 minutes past 1—being at the rate of 32 miles an hour of travelling time, and $28\frac{1}{2}$ miles an hour, stops included. On the return of the same train, with the Directors, the journey was performed with three railway carriages, at the rate of 41 miles an hour, exclusive of stoppages. Subsequently, on the 15th of August, on occasion of the Queen Dowager passing along the line of the Great Western railway, the Charon engine, with a train of three railway and five private carriages, started from Moulshfield at 5 minutes before 12, and in 38 minutes reached Slough, a distance of $29\frac{1}{2}$ miles, being an average speed of $46\frac{1}{2}$ miles per hour. It is stated also that a slight delay occurred on drawing near Slough station, in consequence of another train being there at the time, which made it necessary to slacken speed, and that the average of the greater part of the journey was equal to 50 miles an hour. After leaving the private carriages and trucks at Slough, the directors with some friends, proceeded to London in the three railway carriages, weighing with passengers, about 24 tons. Three miles of the journey were performed in 3 minutes, or at the rate of 60 miles an hour; one mile in 56 seconds, or 64 miles an hour; and the average speed was 58 miles an hour. These statements we find in the London Railway Times. The driving wheels of the Charon are 7 feet in diameter. This is the most rapid performance with a train of carriages, which we have seen authentically stated, though statements have been made of more rapid travelling with only an engine and tender.

It would be difficult to form a statement of the actual cost of the several railways in England, as all of them are constantly requiring new expenditures, for improvements, and enlargements of the original design. Up to April 16, 1839, there were 108 railway companies, established by acts of Parliament. These were authorised to raise as capital stock, sums amounting in the aggregate to £41,610,814; and by loan further sums, amounting to 16,177,630*l*. Further acts passed in the sessions of 1839, and 1840. On the 30th of July, 1840, the whole number of Railway acts which had been passed, was 192—in some instances several to the same company; and the amount of capital authorised, including loans, was 52,786,931*l*. There were then nine bills pending, which have probably passed, granting further authority to raise capital of the amount of 1,375,000*l*. A part of these grants are inoperative.

ARTICLE XVIII.

NEW METHOD OF ENGRAVING.

Within the last year considerable progress has been made in the art of engraving by means of galvanism, which, from present appearances, bids fair to take a high stand among the useful arts. The history of the art is brief. In the summer of 1839, there was received by Mr. Faraday, in England, a letter from Professor Jacobi of St. Petersburg, who has distinguished himself in his researches on the subject of galvanic electricity, in which he described a process which had occurred to him, of copying engravings on copper plates, by the action of the galvanic apparatus. On the publication of this letter, Mr. Thomas Spencer, of Liverpool, announced in a pamphlet that he had been engaged for two years in a course of experiments on the subject, and that he had arrived at results similar to those of Professor Jacobi, in copying copper engravings, and also that he had put in successful execution a plan for executing, by the same means, engravings in relief which could be printed from, like wood cuts, on the same page with metal types. Mr. Spencer's pamphlet contains a full and interesting account of his processes, which were much farther perfected than Prof. Jacobi's. Since the publication of this pamphlet, up to the present time, several persons have been engaged in making experiments which have resulted in several modifications of the process.

The principle of the various processes is simple. It is well known to those who have any knowledge of the laws of chemical affinities, that the salts of metals may be decomposed, and the metal basis reproduced in a pure form. It is also well known that the galvanic current is one of the strongest means of producing this decomposition. Copper had often been produced from the sulphate of copper (blue vitriol,) and in some modifications of the galvanic battery this property of this salt was made use of, and a solution of it was used as one of the exciting liquids.

It first occurred to Mr. Spencer that he might turn to useful account this power of precipitating metallic copper. By precipitating it on a copper engraving he would obtain a precise copy in relief of that engraving, and by a second precipitation on this copy he would obtain an exact fac-simile of it. This was the result Prof. Jacobi attained also. Mr. Spencer went farther. Reflecting, that if he could confine the precipitation to certain parts of the metallic plate which received it, he would have on those parts a raised surface, he proceeded in that way to make blocks with which to print as from wood engravings. Mr. Spencer also arrived at some very beautiful results in copying medals. We will give some account of this here-

after. The following sketch is abridged from his own account of his process.

In the course of a galvanic experiment which he was conducting for a different object, Mr. S. accidentally let fall a drop or two of a varnish which he was using, on the copper plate of the apparatus. Some days after he observed that this plate was covered with a deposition of new copper, except on those places where the wax had fallen. He at once saw that he had it in his power to guide the metallic deposition in any shape or form he chose, by a corresponding application of varnish or other non-metallic substance. This intelligent application of an accident was the basis of his experiments for the purpose of producing raised lines on copper suitable for use in common printing. His account of these experiments is very interesting; we can however only give their results.

The battery used for this purpose is formed by a single plate of zinc and one of copper, the latter being the plate which is to become the engraving, or on which the precipitation is to be made. These plates, connected together by the junction of wires soldered to the back of each, are placed horizontally and parallel to each other, in a very simple apparatus which we will attempt to describe.

Within an earthen vessel is placed another, of similar material, but of smaller size, which has no fixed bottom. The outer vessel is filled with the solution of sulphate of copper which is to be acted upon, in which is placed the plate of copper, immediately beneath the inner vessel, the face on which the deposit is to be made being uppermost, and the copper wire soldered to its back being bent upwards so as to come out of the liquid. The inner vessel is prepared for the operation by the addition of a bottom of brown paper, plaster of paris, or some other porous substance, and in it the zinc plate is placed, parallel, as we have stated, to the copper one, and being of course immediately above it. This vessel is to be filled with a very weak solution of sulphuric acid, or salt water, or sulphate of soda. Mr. Spencer preferred one of the two latter. The reader who understands the science of galvanism at all, will readily understand that under these circumstances, on the junction of the wires belonging to the copper and zinc plates, galvanic action will ensue, and the copper contained in the solution of the sulphate of copper will be deposited in a metallic form. All that is necessary then, is to guide the deposition upon those parts of the plate where a relieved surface is desired.

For this purpose let that side of the copper plate on which the deposition is to be made, be covered with a varnish of such a nature as to receive no metallic deposit, and of a depth equal to the height of the proposed relief lines. For this purpose Mr. Spencer recommends common bees' wax, as entirely preventing deposition, an ob-

ject attained by nothing else he had used. This may be applied by heating the plate. On the surface of this cement draw the design to be engraved with a black lead pencil or a point. The wax must now be cut through in these lines, where the design is to be produced, with a graver or steel point, taking especial care that the copper is *exposed in every line*. Care must also be taken that the lines in the wax are not V shaped, but as wide at the bottom as at top, and that in cutting them the wax is left perfectly smooth and not jagged, or *burred*, in the technical phrase, at the edges of the lines. The reasons for these precautions will be perceived when the reader fully understands the process.

After this engraving in the wax is made, the plate must be immersed in diluted nitric acid,—about three parts of water to one of acid. It will be at once seen whether it is strong enough, by the green color of the solution, and the bubbles of nitrous gas eliminated. The object of this immersion is the entire removal of the wax, which, in the heating process, gets into the pores of the copper. For this purpose the exposed lines on the plate ought to be slightly corroded. Practice will determine the proper corrosion better than any rules.

The plate is now ready to be placed in the galvanic apparatus which we have described. Particular care should be taken that the contact between the wires of the two plates should be perfect, and for this purpose the ends, where the junction is to be made, should be polished, that the requisite action may not be prevented by oxidation. As soon as the apparatus is set in action, metallic copper will be deposited in the lines where the wax has been removed. The length of time requisite to produce the deposition varies with the temperature of the apartment, which should be, if possible, about 80 or 90 degs. Fahrenheit; with the thickness of the partition which separates the inner vessel from the outer, and for which Mr. Spencer recommends the thickest kind of brown paper as very suitable; and, of course, with the thickness of the deposition required. From four to eight days will probably be found sufficient for a deposition of an eighth of an inch.

After the copper has been deposited in the lines engraved in the wax, the surface of the formation will be found to be rough, more or less, according to the quickness of the action. To remedy this, rub the surface with a piece of smooth flint or pumice stone, with water. Then heat the plate, and wash off the wax ground-work with spirits of turpentine and a brush. The plate is now ready to be printed from at an ordinary press.

We may add one or two further directions which will be of use to the experimenter. Mr. Spencer recommends the use of hot solutions of sulphate of copper and of salt. A few undissolved crystals of the sulphate may be added to advantage. As the copper is de-

posited, from day to day, a few crystals should be added. The solution of salt is not saturated, only a few crystals of the salt or sulphate of soda being put in the water. If any very thick deposition of copper is required, it is well to renew the solutions entirely. The zinc in the interior cell should rest at 1-8th of an inch distant from the brown paper, and the plate to be deposited on should be kept at about 5-8ths or 3-4ths of an inch from the opposing paper surface in the exterior cell. In the soldering of the wires as little resin should be used as possible; dilute muriatic acid, or sal ammoniac answers the purpose much better. Resin is a non conductor.

In order that the inner cell may not *rest* on the plate to be deposited on, it should be suspended by a wooden collar which rests on the outer vessel.

It will be readily understood how a process similar to this may be applied to the copying of copper engravings. The plate of which a copy is required, is placed in the apparatus in the same manner as the copper plate in the process we have described; and a deposit of copper made upon it. This deposit will of course present a precise reverse of the original plate. In order that the two may not adhere, the plate to be copied should be lightly coated with bees' wax. Before using it, this wax should be removed as far as possible, by heating and wiping it, but sufficient will remain in the pores to prevent the adhesion of voltaic copper. Before placing it in the apparatus the back and sides of the plate should receive two coats of thick varnish on the back and edges, (a preparation of shell lac and alcohol does very well,) or it should be imbedded in plaster of paris or Roman cement. From the reversed copy a second copy may be taken with similar precautions, which will be of course a precise fac-simile of the original plate. Very beautiful copies of engravings have been executed in this manner, and have been found to bear the working test of printing satisfactorily.

A similar process is applied to the copying of medals. For this purpose, unless the medal be large, a small apparatus may be made by using a common tumbler for the outer cell, and a lamp glass, with a paper bottom, for the inner one, the other arrangements being made like those we have described.

Mr. Spencer states that this process is much quickened by the application of heat, and that the metal so deposited is of a much superior character to that deposited under a common temperature. The apparatus described may be kept at a temperature of from 120 deg. to 160 deg. by being placed at the side of a fire, and a deposition got in a very few hours. The same remark probably applies to the first process, that of obtaining a design in relief, excepting so far as the wax would be softened by a very high temperature.

These duplicates of copper plates are more conveniently made by taking the first copy, the reversed one, on soft sheet lead, by pressing the lead, by a strong screw press, upon the surface of the copper. This is said to take perfect impressions of the finest lines, and the last copy may be taken from it immediately. It is said that copies of wood cuts may be made by covering them over with fine plumbago; plaster and other ornaments may also be copied by covering them with some metal; for the deposition of copper only takes place on some metallic substance. It is stated that Professor Stienheil of Munich, is applying the process for making a cast in copper, from a composition by the celebrated sculptor Schwauthauler, representing the labors of Hercules, and containing 140 figures.

This description will give our readers an idea of the most important processes of this new art; which has received, however, many modifications. Mr. Spencer dwells at length on a branch of it which we cannot consider so useful as those we have described. It consists in making, by manual labor, a mould in type metal or lead, from which, by galvanic precipitation, he obtains an engraving in relief, to be printed from, like a wood engraving. The difficulty of cutting all the lines in this mould, smoothly and of precisely equal depths, which is quite necessary to the process, has been the principal obstacle to the use of a similar one in making engravings from similar moulds, by casting. We would suggest, however, that an engraving similar to a copper plate engraving might be made in type metal, or some soft metal, much more easily than in copper, and a copper plate to be printed from as usual in copper plate printing readily reproduced from this by the means we have described above. Where lead or type metal moulds are used, no wax is necessary to prevent adhesion, as on heating the metals slightly, their different expansion serves to separate them readily. A leaden mould may be made by pressure on a wood engraving. The lead should always be clear and bright.

Mr. Smee connects his pans with a galvanic battery of the ordinary construction. He suggests that an original copper engraving may be produced, by drawing on a smooth piece of copper with any thick varnish or pigment insoluble to water, and then exposing the plate to the action of the galvanic current, when copper will be thrown down first on the uncovered parts, and will gradually grow over the drawing, and the galvanic plate, when removed, will be ready for printing. He acknowledges, however, a practical difficulty, for unless very thick oil paint is used, sufficient depth of line is not obtained to hold the ink. He hopes, however, that this difficulty may be overcome by those used to drawing, as the lines are sharp edged, and the process possesses, in addition to its cheapness, the valuable property of not requiring a reversed design. He suggests that, by placing a

piece of copper similarly drawn upon at the other end of the battery, the oxygen end, the exposed part of the metal will be acted upon, leaving a drawing in basso relievo.

The method of precipitation will be found useful in coating iron with copper, and thus preventing its easy oxidation. Iron has been precipitated from the sulphate of iron, by Mr. Cox, of N. York, by a similar process ; he hopes to make use of it in the same way.

The whole subject is a very interesting one, and we cannot but hope that future researches will render the discovery highly useful.

ARTICLE XIX.

TURKEY AND EGYPT.

The question of war or peace between Turkey and Egypt, is at present of all questions of foreign politics, that which excites the greatest interest, and which in its possible results involves consequences of the greatest importance. It is not that the dismemberment of the Turkish empire—the possession of a province more or less by the Pacha of Egypt—or even the overthrow of the Turkish dynasty, are of themselves events in which we are immediately very deeply interested. But it is because the great powers of Europe have taken these matters into their hands, and undertaken to settle them, and because they are not all agreed upon the mode in which this settlement shall be made. It is because the question of an Egyptian war, involves the possible, and perhaps the probable contingency of an European war, that it becomes a question of interest to Europe and to America.

From the importance of this question, and the interest which it excites, the reader may expect from us some explanation of the state of affairs, and of the position of the parties. It is well understood that Mehemet Ali, nominally the Pacha or Viceroy of Egypt, but actually the absolute sovereign of that country, has been for many years in a position of either actual rebellion against his lawful sovereign, the Emperor of Turkey, or of very reluctant and qualified submission. The nature of the relations between the nominal vassal and his lord, has changed from time to time, and their precise state has not been always understood, but the impression of these relations has been such, that it would have surprised no one had the Viceroy declared himself entirely independent at any moment, for many years past. It has been understood also that on the other hand, the Sultan has been anxious to avail himself of the first favor-

able opportunity to rid himself of so powerful and stubborn a vassal, or at least to deprive him of some portion of his power.

Not to go farther back in the history of these parties than 1833, the year after Mehemet Ali had extorted from the Sultan the government of the Province of Syria, it may be stated that the parties exerted themselves in enlarging their military and naval means, as was supposed, preparatory to another trial of strength, notwithstanding the late treaty between them. These preparations led to no result. In December of that year, a formidable conspiracy was discovered at Aleppo, the object of which was to massacre the Egyptians and the partizans of the Viceroy, and to deliver the city into the power of the Arabs. This was followed in the ensuing spring by a formidable insurrection in Palestine and Gallilee, which was quelled with difficulty. A very obstinate rebellion broke out the same year in the province of Yemen. These rebellions were suppressed by the Viceroy, but they occasioned him a great deal of trouble. The Sultan seems to have considered the opportunity favorable for chastising, or restraining the power of his ambitious vassal, and he raised an army of 60 or 80,000 men, which he sent into Asia. He at the same time caused to be published in the Ottoman Monitor, a paper, which indicated the hostile purposes of this armament. The European diplomatists interfered, and dissuaded the Sultan from his purpose. The military movements however, and the object of them were well known in Egypt, and the Viceroy not only made vigorous preparations for war on his part, but talked openly of declaring himself independent sovereign of Egypt, of Syria, and of the Arabian Peninsula. The interference of the European powers composed these mutual threats for the time; the Sultan remitted to the Viceroy his arrears of tribute, and the Pacha evacuated the district of Orfa in Asia, which he had persisted in holding, in violation of the treaty of 1832. The Sultan availed himself of the settlement of this controversy, to extend his system of reform, by creating a new permanent and regular militia, and opening schools for the instruction of the officers and subalterns. - He took pains also to strengthen his relations with the European powers, and on this occasion sent to France in the capacity of Minister, Mustapha Reschid Bei Effendi, a functionary, who has since become well known in Europe, and who is now the Prime Minister of the present Emperor of Turkey. He took this occasion to punish one of his refractory vassals, the Bey of Tripoli, who for a long time had paid but a nominal homage. An Ottoman fleet suddenly appeared before Tripoli, under the command of Mustapha Nedjeb Pacha, who invited the Bey, Sidi Ali Pacha on board, at the same time landing 5,000 men and a numerous artillery, and taking possession of the fortifications of the city. Sidi Ali Pacha was held a prisoner, and sent to Constantino-

ple. His life was spared, but he was deprived of his office, and of his fortune, amounting to fifteen millions of piastres. He was the last bey of the dynasty of the Karamanli, who had reigned in the Regency of Tripoli, for a period of 200 years.

In the summer of 1837, the Pacha of Egypt, finding himself obliged to keep up a large army to carry on the war in Arabia, and to keep the Sultan in check, made propositions to His Highness, the Grand Sultan, to pay in future a larger tribute, on condition that Egypt and Syria should be hereditary in his family. He promised to disarm his fleet and reduce his army. Sultan Mahmoud, though he declared that this concession was contrary to the rights of the Caliphate, consented to relinquish Egypt, but demanded that Syria should be restored to him as a compensation for the pardon which he granted to his vassal. In consequence of this requisition, the negotiations were broken off, and affairs remained in the same condition as before.

In 1838, there was again a threatening of war between the Sultan and his Egyptian vassal—Mehemet Ali Pacha, in a note addressed to the foreign consuls, declared that in future, he would pay no tribute to the Porte, and that he considered himself independent sovereign of Egypt, Arabia and Syria. The Sultan, naturally incensed at this declaration, would have immediately commenced hostilities, had he not been again restrained by the influence of the foreign ambassadors, and persuaded to delay. In the meantime, Mehemet Pacha, in consequence of the arguments of the European consuls, had modified his pretensions, and countermanded his fleet, after it was ready to sail. The Sultan, in consequence, changed the destination of his fleet, which was on the point of sailing, and the war was again put off. The prospect of the maintenance of peace was strengthened by the announcement by the envoy of Mehemet Ali, that he was ready to pay a million of dollars, arrearages of tribute, which he owed to the Porte. An actual payment to the amount of 750,000 dollars was made in August of this year. The efforts of the European powers with both the parties, though not sufficiently powerful to effect a reconciliation, were so far successful as to prevent an actual outbreak. Both parties, however, continued their warlike preparations. The Sultan strengthened his army and his fleet, procured European officers, and fortified the towns of Koniah and Angore.

In March, 1839, war appeared inevitable. The Sultan seemed resolved to be avenged of his vassal, and declared that he would march in person at the head of his army. He had sent his rear admiral to demand of Mehemet Ali the payment of the tribute due, but the envoy was not able to see him, in consequence of his absence in Abyssinia, or could not obtain a promise of an interview until

September. The Sultan was indignant, and pressed his military preparations in every department. The French, Russian and English ambassadors used their best efforts to restrain him, and in reply he gave assurances of his pacific intentions. Reinforcements, however, were sent to the Seraskier of the army of Asia, Hafiz Pacha, at Orfa, on the frontier of Syria, and the fleet, of 27 sail, was ready to sail in a few days. The French government offered its mediation between the Sultan and the Viceroy. The Sultan declined it, and appeared more disposed than ever to treat Mehemet Ali as a revolted subject. The latter, in reply to the representations of the consuls general of France, England, Russia and Austria, declared that he had conquered Egypt, Arabia, Sennaar and Syria by the sword, and that he would preserve them by the sword, and that if the Sultan sent his fleet to sea, he would take the command of the Egyptian fleet in person, and would try the chances of war. He ordered a new levy of 50,000 men, having already under the command of his son Ibrahim in Syria, an army of 80,000, of which 30,000 were at Aleppo, and a strong reserve at Damascus. In April, the prospect was again changed, and both parties assumed a more pacific attitude, and both made to the allied powers the most pacific professions.

On the 21st of April, however, the first column of the Turkish army crossed the Euphrates near Bir. This was not necessarily regarded as a hostile movement. The Egyptian army was concentrated near Aleppo. Though some slight skirmishes took place, the negotiations for peace were still carried on. The ambassadors of the allied powers had frequent conferences with the ministers of the Porte. The Sultan published a proclamation in June, declaring on what conditions he would make peace, which was soon followed by a decree, in which the Viceroy and his son were declared to be deprived of all their functions, and the dignities with which they had been invested, and Hafiz Pacha was appointed to replace Mehemet Ali in the government of Egypt.

Mehemet Ali, having received from his son Ibrahim Pacha, who had the command of the Egyptian army, a letter announcing that the Ottoman army had taken possession of four villages, and placed arms in the hands of their inhabitants, declared to the consuls of the four great powers, that he should henceforth be compelled to oppose force to force, and that he should give orders to that effect to his son, but that he should also give him directions to await the arrival of the Turkish commander, on the Egyptian territory, that they might be proved to be the aggressors. But to strengthen himself as much as possible, the Viceroy called on the Bedouins of the desert for assistance, and received from their Sheiks more than twenty thousand men.

On the 12th of June, the Ottoman fleet, composed of 25 vessels, and two steamboats, having on board 12,000 men, was ordered to set sail. It was to proceed to Syria, to assist Hafiz Pacha in his military operations. The declaration of war against Mehemet Ali Pacha was drawn up, and would have been made public, had it not been for the increasing severity of an illness, under which the Sultan had been for some time suffering, and which he had concealed from his physicians, and even from his most intimate companions.

On the 20th of June, the two great bodies of the Turkish and Egyptian armies found themselves very near each other in the district of Aintab. The city of this name was occupied by the Egyptian troops, under the command of Suleiman, Pacha of Marasch. The agents of Hafiz Pacha, were exciting the people to revolt, and detachments of his army were constantly committing open acts of hostility. In consequence of these proceedings, Ibrahim Pacha prepared to throw off the restraint, under which he kept himself in obedience to his orders, and which must have been very insupportable to him, who was not accustomed to endure the provocations of an enemy whom he did not dread.

On the 22d of June, he made a successful attack upon a body of the Turkish army near the Euphrates, put them to flight, and took eight hundred prisoners, forty pieces of artillery, and a chest containing fifty thousand piastres.

Ibrahim Pacha, encouraged by this success, made preparations for a renewed attack on the Turkish army. He assembled his chiefs, and exhorted them to courage. Towards midnight, while the Egyptians were reposing, some regiments of the Turkish army surprised the advanced posts, and proceeded with four batteries of artillery to the camp of Ibrahim. The firing threw the Egyptians into confusion. During this disorder two battalions attempted to pass over to the Turkish army. Ibrahim and Suleiman Pacha mounted their horses, and taking with them a battery, compelled the insurgent battalions to return to the camp. Ibrahim Pacha was so indignant, that he killed with his own hand five of these deserters, and not more than a hundred and fifty of these men succeeded in reaching the Turkish camp.

At dawn, Ibrahim arrayed his army, and made so successful an attack on the Ottoman camp, that it was thrown into great disorder, and the bravery and activity of Hafiz Pacha and the European officers in his service could not overcome the terror of the Turks. They left their guns on the field of battle, and fled in every direction. In their flight they left behind them a hundred pieces of cannon, all their baggage and military stores. They had four thousand five hundred men killed and wounded. Among the slain were five French officers, and ten or fifteen European physicians and surgeons. Ha-

fiz Pacha retired upon Marasch, and succeeded in saving his military chest, stated to contain 45,000 purses, equal to five millions of francs. The loss of the Egyptians was said to be about 3,000 men.

Ibrahim Pacha dated his account of his victory from the Turkish camp, which he found all entirely furnished, as if it were regularly occupied. His father received the account, while the consuls general of England, Russia, and other great powers were in his presence. As soon as he had found out the contents of the despatch, he caused it to be immediately translated and read in a loud voice in the assembly. Some courtiers came forward to congratulate the Pacha; but, from an honorable delicacy, he refused these demonstrations in presence of the consuls, and maintained the cool demeanour, which generally distinguishes Mussulmen.

The news of this battle of Nezib reached Constantinople on the 8th of July. But before learning this defeat, the inhabitants of the capital were occupied with another event of a still more serious nature. On the first of July, the public crier had gone through the city, announcing the death of Sultan Mahmoud. He had for some time been residing in a kiosk near Scutari. In the morning, when his attendants entered the apartment where he chose to be alone, they were greatly surprised to find him dead, and from appearances, it seemed that he had expired in the middle of the night, in the 55th year of his age, and the 31st of his reign. The usual customs of firing from the ships at anchor, and from the shore, were observed, and the two sons-in-law of the Sultan, and the President of the council, Khosrew Pacha, proceeded to present themselves before the heir of the throne, Sultan Abdul Medjid, the eldest son of Sultan Mahmoud.

One of the first measures of the new Sultan was to give orders to the army in Asia, and to the fleet, to suspend hostilities against Mehemet Ali. The capitan Pacha, Ahmet Fewzi Pacha, who had not left the Bosphorus, replied to this order, that he had no commands to receive from Khosrew Pacha, a traitor, who had wished to deliver his master to his enemy, and who had perhaps hastened his death. He added that rather than obey the government under such a minister, he preferred to present himself to the Viceroy of Egypt, whose heart preserved the sentiments of a true Mussulman. This strange and perfidious conduct of the capitan Pacha, produced a deep sensation at Constantinople. Representations were made to him, to endeavour to divert him from the course on which he had resolved, but without effect. He immediately set sail with the fleet, and on the 14th of July, entered the port of Alexandria, and placed the whole Turkish fleet at the disposition of Mehemet Ali. An example of a grosser treachery hardly occurs in history.

Khosrew Pacha, who at the time of the death of the Sultan Mah-

moud was at the head of the ministry, was on the occurrence of that event, raised to the dignity of Vizir, with extraordinary powers. The capitan Pacha availed himself of this wretched pretext for his treachery. In a document afterwards published at Alexandria, under his authority, he attempted to justify before the world the course which he had taken, on the ground that Khosrew had been the means of instigating the late Sultan to the war, "of breaking the harmony which reigned between the Sultan and the Viceroy," and plunging the nation into a war,—that he had been separated from Mehemet Ali by an abyss of hatred for 40 years, and that he was the only obstacle to a union between Egypt and Turkey, a union which was necessary to the salvation of the empire. It was under the influence of this double thought—the overthrow of Khosrew, and the union of Constantinople and Cairo, that Ahmet, as he pretended, adopted his resolution. It was to prevent the effusion of blood, and to bring back peace, by the union of the two parties. It was by such miserable sophistry that he endeavoured to justify himself for his act of treachery.

Soon after the accession of the young Sultan to the throne, he granted to Mehemet Ali an act of pardon, and offered him the right of hereditary succession in his family, of the administration of the government of Egypt; and a commissioner was appointed to treat with him on this basis. In reply to this proposal, the Viceroy made known to the Porte his claim to the hereditary government, not only of Egypt, but of all the provinces at present under his administration, and declared that he should make the restoration of the fleet depend upon the concession of these claims. He demanded also, that Khosrew Pacha should be discharged from his office of Grand Vizir of the empire. In the meantime, the ambassadors of the five great powers of Europe, England, France, Russia, Austria and Prussia, addressed to the Porte a collective note, in which they offered their intervention for the settlement of the differences with the Pacha of Egypt. This offer was accepted by the Sultan.

A proposition was accordingly submitted to Mehemet Ali by the ambassadors of the allied powers, in the name of the Sultan. This was despatched by Capt. Anselme, aid-de-camp of the French Admiral Roussin, and the consuls general of all the powers were instructed to give the necessary explanations of the views of the ambassadors. This proposition was, that the Porte should recognise the Viceroy's hereditary right to the government of Egypt; together with the Pachalic of Syria, but not its independence. The Pachalic not to include the cities of Damascus and Aleppo, and the fortifications of Taurus and the Euphrates to be destroyed, and the Turkish fleet to be restored. To this proposition Mehemet Ali replied, by a letter addressed to Khosrew Pacha, dated Aug. 9, in which he ex-

pressed his gratitude for the offer to grant one of the wishes of his heart, and expressed a hope that the other also would be granted. His answer to the five powers was more explicit. He demanded as his ultimatum, Egypt hereditary, and independent—the hereditary Pachalic of Syria, such as it was granted after the battle of Koniah, bounded by the Euphrates and the Taurus—this Pachalic to continue to acknowledge the sovereignty of the Grand Seignior—and finally, the discharge from the counsels of the Divan, of Khosrew Pacha, the Grand Vizir, his personal enemy, as a guaranty of the good faith of the Sultan, in proposing a definitive peace between Egypt and Turkey. On these terms which he believed he had merited by his services and his success, he would restore the fleet entire to Constantinople, and would be ready to support the empire of the Sultan every where, and on all occasions, by his ships of war, and his armies.

Such is the issue which is joined between the parties. France united with the other powers, in the outset, in their unanimous declaration that the maintenance of the present dynasty in Turkey was essential to the peace of Europe, and of their determination to prevent any dismemberment of the empire. The administration of Marshal Soult afterwards claimed for that minister the credit, of having, by his prompt intervention, and his influence with the Pacha of Egypt, preserved the peace of Europe, by preventing the advance of Ibrahim Pacha, and suspending hostilities after the battle of Nezib. He had despatched his aid-de-camp, Mr. Caillé to Egypt, in anticipation of the breaking out of hostilities, who obtained from the Viceroy, after earnest solicitations, an order to suspend the march of the army, and arrived with it at the camp of Ibrahim, five days after the battle. He found him preparing to march upon Koniah, Orfa, and Diarbekir. After receiving the orders of his father, Mehemet with reluctance abandoned his purpose of following up his victory.

Long negotiations ensued, and for a long time with very slight results. Earnest persuasions were addressed to the Viceroy, to induce him to make an abatement of his claims. But he was disposed to yield very little. The difficulty which arose from the position in the government held by his old enemy, Khosrew, was removed, by his having fallen into disgrace, in consequence of some charge of maladministration, and being superseded in his office. It is singular that the enmity between these two men was of nearly forty years' standing. Khosrew held the station of Viceroy of Egypt, when that country was evacuated by the French troops in 1801. During the controversy with the Mamelukes, in 1803, Mehemet Ali, who at that time held a subordinate command, joined a party which made Khosrew prisoner, and deposed him from office. After being kept a short time a pris-

oner, he was reinstated in the government, but he was shortly after obliged to abandon it, and to return to Constantinople. After the interval of a year he was succeeded in the Viceroyalty by Mehemet Ali, who was appointed to it by a firman from the Porte, and has held it ever since.

After the refusal by Mehemet Ali of the first proposition made by the allied powers, the question was debated for a long time, what modification of the proposition should be made. It was at length proposed to offer in addition to the hereditary sovereignty of Egypt, the government of the Pachalic of Acre, in Syria, except the town of Acre, *for life*. This offer was refused. At this point, differences arose between France and the other allied powers. France maintained that it was unreasonable, after the victory of Nezib, to take away from the Viceroy half the province of Syria, the whole of which he possessed by previous treaty. The proposition was renewed by Lord Palmerston, in March last, to offer the hereditary sovereignty of Egypt, and the Pachalic of Acre for life, including in the latter the town of St. Jean d'Acre. "This offer," it is remarked in a narrative of this negociation, attributed to the pen of the French prime minister, "was scarcely more admissible than the other, for it only gave the conqueror of Nezib, Egypt and the lesser part of Syria, and it took from him, besides, the greater part of Syria, Adana, which Mehemet Ali calls the key of his house; Candia, the Queen of the Archipelago, and the holy cities, which give so much moral influence in the East. To take all these possessions from the Viceroy, after a victory, was to force him to extremities, and to expose Europe to serious dangers. The Cabinet of the 1st of March had, by great efforts, obtained considerable concessions from the Viceroy, and almost induced him to give up Candia and the holy cities. They were less fortunate with regard to Adana, but they had still hopes of inducing him to concede that, on condition that they gave him the hereditary government of Syria. But it was evident that the Viceroy would not surrender any portion of Syria, unless compelled by war, and when it was proposed to deprive him of what he had a right to retain possession of, the French ministry would not yield."

The French government accordingly refused to accede to this proposition. They declared that if reasonable terms were proposed, they would endeavour to induce the Pacha to accede to them; but if the great powers only made proposals which would render him desperate, and compel him to march against Constantinople, and thus provoke the Russians to come there, that in that case France would resist.

This took place in May last, and it appears to have been the last of the conferences in which the French government took a part.

Soon after this, the news arrived in Europe of a serious insurrection in Syria. It seems that the four powers, who were agreed in the course which it was reasonable to pursue, deemed it proper to bring their negotiations to a crisis, and make them bear upon some useful course of action. Without further consulting France, of which omission the French government loudly complained, they proceeded, in concert with the Porte, to negotiate the treaty of the 15th of July, which was the subject of so much excitement in France, and has been so much discussed every where.

This treaty consists of two separate acts, one of which contains the engagement of Great Britain, Austria, Russia, and Prussia, with the Grand Sultan, to render him the aid necessary for maintaining the integrity and independence of the Ottoman Empire, and the other specifies the terms on which the Sultan promises to settle the differences between him and Mehemet Ali. The most important part of this latter act is embraced in the following stipulations:—

“I. His Highness promises to accord to Mehemet Ali for him and for his descendants in line direct, the administration of the Pachalic of Egypt; and His Highness promises, moreover, to accord to Mehemet Ali during his life, with the title of Pacha of Acre, and the command of the fortress of St. Jean d’Acre, the administration of the southern part of Syria, of which the limits are designed by the following line of demarcation:—

“This line drawn from the Cape Rassel Nakhora, on the shores of the Mediterranean, extending from thence directly to the mouth of the river Seisaban, northern extremity of the Tiberias, along the western coast of the said lake, following the right bank of the river Jordan and the western coast of the Dead Sea, extending from thence in a right line as far as the Red Sea, and resting on the northern point of the Gulf d’Akaber, and following the western coast of the Gulf d’Akaber, and the eastern coast of the Gulf of Suez, as far as Suez.

“Nevertheless, the Sultan in making these offers attaches to them the condition that Mehemet Ali accepts them within the space of ten days after the communication has been made to him at Alexandria, by an agent of His Highness; and that at the same time Mehemet Ali deposit in the hands of that agent the necessary orders to the commanders of his forces by sea and land to retire immediately from Arabia, and all the holy cities therein situated, from the island of Candia, the district of Adana, and all the other parts of the Ottoman empire which are not comprised in the limits of Egypt, and in that of the Pachalic of Acre, such as they are above designed.

“II. If within the space of ten days above fixed, Mehemet Ali does not accept the said arrangement, the Sultan will then withdraw the offer of the life administration of the Pachalic of Acre; but His

Highness will still consent to accord to Mehemet Ali, for him and his descendants in line direct, the administration of the Pachalic of Egypt, provided that this offer be accepted in the space of ten days following, that is to say, in the space of twenty days, counting from the date of the communications made to him ; and provided that he likewise deposit in the hands of the agents of the Sultan, the necessary instructions to his commanders by land and by sea, to retire immediately within the limits and within the ports of the Pachalic of Egypt.

“ III. The annual tribute to be paid to the Sultan by Mehemet Ali, shall be proportioned more or less to the territory of which the latter will obtain the administration, according as he accepts the first or the second ultimatum.”

The other act contains the engagements of the powers who are parties to it, severally to co-operate with the means of action which each of them can dispose of, in compelling Mehemet Ali to comply with the conditions and arrangements proposed in the treaty as above cited, and in defending the throne and the capital of the Empire, in case they shall be threatened. The ratifications of this treaty were exchanged in London previous to the 15th of September. Rifat Bey, Councillor of the Ministry of Foreign Affairs, was despatched from Constantinople in a government steamer to Alexandria, to communicate this ultimatum to the Viceroy. The communication was made on the 17th of August. It is stated that on the 27th, the day on which the ten days, limited for receiving the reply of the Viceroy expired, Rifat Bey, accompanied by the four consuls, waited on him, and that the conference lasted only three and a half minutes. He declined the proposition, and when Rifat Bey attempted to speak, he interrupted him and remarked that there was nothing to be said, that he ought to know his intentions, and that was sufficient. In reply to the English consul, who wished to speak, he said that he did not wish to hear any thing, for his determination was fixed, and the powers might do as they pleased. It was reported that he afterwards agreed to accept the arrangement on condition that the government of Syria should be conceded to him for life, and that this proposal was to be submitted to the Divan, through the French ambassador. Whether it has in fact been made, or if made, will be accepted, is one of the questions which the future must determine.

MISCELLANY.

THE WINGS OF ICARUS,

Or, the Provincial in Paris.

[Continued from page 235.]

CHAP. VIII.

Notwithstanding the want of repose which a few hours of restless sleep had only half satisfied, Deslandes was at the rendezvous which had been fixed the evening before, at the exact time. Precisely at noon he presented himself at the house of M. Piard, and was introduced immediately into the cabinet of the counsellor of state, who had just breakfasted, and was reading the papers. The first words of the conversation shewed the substitute the justice of his conjectures.

"You are acquainted, then, with Mad. Marmancourt?" said M. Piard to him, looking down.

"Only since yesterday," replied Deslandes; "one of my friends carried me to her house."

"It is a pleasant house," rejoined the counsellor, with a careless tone. "Cato would have been out of place there, but Horace would have gone there often, I am certain. Perhaps at my age, and in my position, I ought to imitate the austerity of the philosopher rather than the freedom of the poet, but when one has been chained down all day to serious labor, it is not forbidden, I think, to catch in the evening some few moments of recreation and leisure. I need not tell you that there is no use in mentioning here the name of Mad. Marmancourt. My visits to that lady are perfectly innocent, but the most simple actions are sometimes misinterpreted,—"

"And Cæsar's wife must not be suspected," interrupted the substitute, with the familiarity of a regular confidant.

"Just so," said M. Piard.

"I know that discretion is one of the first duties of the man who wishes to rise."

"You have good principles, but let us talk about your affairs. From the letter of M. de Loiselay, it would seem that you desire to enter the council of state. It is very difficult."

"If it were easy," said Deslandes smiling, "I should not take the liberty to trouble you."

"You understand that in attempting to serve you, I contract toward the ministry a real responsibility. I do not doubt in any way your capacity, but every place calls for a particular aptitude. A man may have great talents without being fit for certain places, which call for peculiar qualities."

"Put me to the proof," said the substitute, boldly.

"That is what I am thinking of. Here," continued M. Piard, tak-

ing from his table a bundle of papers tied with a red ribbon, "here is an affair respecting which I am employed to make a report to the committee on controversies. It relates to an administrative dispute between the city of Lyons and the directors of bridges and causeways. Make out a report upon that."

"In what form," said Deslandes, seizing the bundle with an eager hand.

"Make a report as if you were in my place. Are you the man to finish this between now and Tuesday? Three days is perhaps a short time,—the subject is thorny, and you will have to make researches."

"If I should have to work upon it every night, you shall have it ready by Tuesday."

"Well—this is an ardor which pleases me, and reminds me of that of my youth. Tuesday, then, and do not forget you dine here to-day."

Though the *pacquet* submitted to the decision of the counsel of state, really resembled very much the bundles of papers belonging to the court room of D***, yet the substitute pressed it under his arm with the tenderness of a mother embracing her first-born child. Taking leave of M. Piard, he entered the carriage and drove to Blondel's, whom he found in his robe de chambre, carelessly stretched on a divan, a cigar in his mouth.

"I thought you were coming to breakfast with me. I have been waiting for you more than an hour."

"I had not time," replied Deslandes with a hurried air. "You know business must go before every thing."

"What the deuce have you there? It is at least the manuscript of a romance in two volumes."

"It is the bundle of papers relating to an affair before the counsel of state, and I am employed to write the report upon it."

"Pest, you do not mean to lose time,—you arrived yesterday, and to-day you are in office."

"It is just so, my dear," replied the substitute, with a smile sufficiently self-satisfied. "I must go to work, so we must speak little and well. I came to ask your advice. Yesterday a little accident happened to me at Mad. Marmancourt's: I spilt some tea on her dress; it was more her fault than mine, for she involuntarily pushed my elbow. She pretends her dress is ruined. I would maintain before the Academy of Sciences, assembled, that a few drops of tea will not hurt silk. But this is not the question—small or great, the evil is done—instead of vexing myself about it, I am resolved to turn it to advantage. I have just thought of something and I have come to consult you about it."

"I am all attention," said Blondel.

"I am very desirous to secure the support of M. Piard; but M. Piard, from what you have told me, and what I have myself seen this morning, has, I imagine, a great regard for Mad. Marmancourt; I, therefore, wish to gain the good will of this same lady."

"Here is a dilemma without a reply."

"It is no dilemma, it is a syllogism. All ladies depend on their

toilet. I am very certain that Mad. Marmancourt owes me a grudge on account of this unlucky stain, and I am desirous to efface the unfortunate impression. Do you think that a pretty present, offered in a delicate manner, and with all due form, would have any chance of being accepted? Would the proceeding be too cavalier? Would she be likely to take it amiss?"

"As to that," said Blondel with an air of satisfaction, "nobody but a prude could be offended by an attention of this sort, and I have told you she was no prude."

"In that case, be so kind then as to dress yourself, while you are doing this, I will write a little note, politely expressed. You shall take me to a fashionable warehouse, for I might go to the wrong place. A velvet dress, for example, as it is winter. Does that strike you as a suitable present?"

"Undoubtedly it would do very well;—the intention, not the value of the gift, will be considered."

"And you think she will not be displeased?"

"She is so good," replied Blondel, who was forced to bite his lips to prevent laughing.

The Parisian finished his toilet, while the provincial was writing his letter, and both went to Aubertot's. There a polite young gentleman, smiling, frizzed and dressed as if for a ball, measured, cut off, folded and bundled up in the most gracefully expeditious manner, a quantity of black velvet, sufficient, as it seemed to Deslandes, to hang a chapel for a funeral.

"Twelve ells at twenty-five francs the ell—three hundred francs," cried the provincial, as he read the bill,—“Sacristy, it is rather dear. Should you have imagined there was so much stuff in a lady's dress?"

"In the time of *gigot* sleeves it was much worse," said Blondel, by way of consolation.

The packet was put in an envelope, and accompanied by the note, was sent to the address of the lady, and Deslandes quitted his friend on account of the business in which he was engaged, and returned immediately to his lodgings.

Two hundred francs for ball tickets, thought he, on the way,—fifteen louis lost at Bouillotte, and fifteen more for this rascally velvet,—this makes a total of eight hundred francs spent in less than twenty-four hours. Money goes off quickly in Paris. M. de Loiselay quotes as great prowess, an expenditure of ten thousand francs in three months. If I go on as I have begun, my twenty thousand francs will last me just twenty-five days. On my faith, I must retrench,—but, bah! what is eight hundred francs? The bundle of papers I have under my arm, is worth double to me. M. Piard wants to make trial of my powers. I like this. I will carry him on Tuesday a piece of work which will make him open his eyes and ears,—I think he may father it with some confidence that it will do him honor before the counsel of state. My position is very plain, and my path clearly marked out. The pursuit of places is a steeple chase. If I wish to run, a horse is necessary. M. Piard will have the goodness to serve me for one; if he shows himself res-

tive, I will apply to him by way of spur, on one side, his wife, on the other, his mistress; I hope I shall not be troubled to keep them both in my interest. He must go, the counsellor of state—yes, indeed, and on a gallop too.

Deslandes began the reading of the paquet tied with a red ribbon, with the ardor mingled with fury, which the musqueteers of old showed in mounting to an assault, but he found the litigious bastion better defended than he had anticipated. At the end of an hour, he acknowledged the impossibility of making a breach in it with no other resources than his own intelligence and memory, and he found the necessity of calling to his assistance, Merlin's Repertory, the Recueil of Daltoz, the Bulletin of the Laws, and all the rest of the artillery for the siege, which he had unfortunately left behind him at D***. Making up his mind immediately, he dined quickly, and went to shut himself up in a reading room, filled with Latin books, such as he wanted. He passed the whole evening there, in examining works on jurisprudence and in taking notes. In this long sitting he had only time to make a sketch of the researches which would be necessary to complete his work. He went bravely to it again the next day, and devoted the whole of it to his labor, except a few moments spent in eating. Finally on the third day, having exhausted the science of the books, and settled his opinion, he thought proper to begin to draw up his report. To avoid being disturbed or diverted, he ordered some food to be carried to his room, and shut himself up there, resolved not to go out of the apartment until he had finished his work.

At this moment, the substitute might have served for a living demonstration of the theory of Fourier on the wonderful effects of attractive labor. A discussion, loaded with figures, and which would have seemed dry and nauseous to him, if it had been the investigation of a case before a tribunal of the First Instance, became a work full of interest, and was executed with nerve, thanks to the influence of these magic words—the counsel of state. During eight hours he wrote without relaxation, without fatigue, without *ennui*—a thing which he had never done since he became a magistrate. At last there came a moment, when finding his brain fatigued and his fingers cramped, he opened the window to breathe an air more fresh than that of the cell in which he was confined. He found himself looking out on a little angle of about twenty feet, from which all prospect was excluded, and all the architectural ornaments in sight were two metal spouts, one of which served to conduct off the rain water, and the other opened into a common sewer from each story. This view, more confined than picturesque, made him, in spite of himself, recal the one he enjoyed from his apartment at D***. He remembered the venerable aspect of the black cathedral, the regular front of the modern city hall, the heroic bearing of the great man in bronze, the refreshing murmur of the fountain, and the rural aspect of the lime trees, planted around the square.

It must be confessed, thought he, that this prospect is not so agreeable as the other. If I had a long work on hand I should rather des-

patch it at home, by my own fireside, than in this room, where I have neither light, nor sun, nor air. But, thank God, it will be done in two hours.

Deslandes closed the window, and sat down again with renewed ardor, before the little table which served him for a desk. He had scarcely written half a page, when a sudden knock at the door made him start. Though vexed at the disturbance, he rose to open it.

"Ah, is it you," said he, perceiving Blondel. "You are ill—you are pale as death."

Blondel de Gustan was indeed very pale. His eyes red, his manner disturbed, and his dress disordered. The young magistrate did not guess what had happened to his friend, but the story may be told in a few words. Faithful to his gambling habits, this corsair in yellow gloves, had just left a gaming house after a struggle of three hours, in which time he had lost the two thousand francs borrowed of Deslandes and promised to M. Bigar. From this wreck, Blondel, according to the custom of gamblers, had not saved a single sous, and he found himself at the same point of distress as he had been in when his friend reached Paris. In this emergency he came to pay a visit to Deslandes, or rather to the seventeen hundred bank bills with which the substitute's portfolio was furnished.

"If I am pale you are not less so," replied Blondel with an affected carelessness. "What diabolical trade have you been carrying on the last three days? Is it you who have scribbled all this paper over?"

"Scribbled!" replied Deslandes; "please to speak with more respect of a *chef d'œuvre* of logic and erudition. Shall I read it to you?"

"You know that jurisprudence is not my forte, but *chef d'œuvre* or not, I did not suppose you had come to Paris to shut yourself up tête-à-tête with a writing desk."

"On my faith, I did not expect it either. I had decided to give myself a complete vacation—to see the world—to run to the theatres, and here are three days in which I have done more work than I usually accomplished in fifteen. But it will only take me a few more hours to complete it. Apropos, have you seen Mad. Marmancourt?"

"Yes, the dress was admired, and you pass for a man of taste."

Deslandes complacently stroked his chin.

"What are you looking for," said he to his friend; "your eyes seem to be wandering here and there in a troubled manner."

"I am looking at your niche—it is not fit to be called your room," replied Blondel, rising. "What has put it into your head to lodge here? Except from me, with whom you make no ceremony, you could not decently receive a visit, and you are hardly safe here yourself."

"How is this," said the substitute, "has this hotel a bad reputation?"

"I should not trust much to it, if I had with me a considerable sum of money. Where do you hide your pocket book?"

"There," said Deslandes, pointing to an old mahogany secretary surmounted by a marble tablet which was broken in three pieces.

Blondel approached the secretary, and laid his hand upon it as if to try its strength.

"Here is a safe place for money," said he, shrugging his shoulders, "with one hand I could break this lock. And then in these furnished hotels, which are under the eye of the police, they have keys to all the furniture,—a bundle of bank bills is so tempting, and disappears so quickly."

Deslandes got up suddenly, opened the secretary, and found in one of the drawers his pocket book untouched.

"You frightened me," said he, "but you see there was no cause."

"What has not happened to-day may come to pass to-morrow," said Blondel, in a sententious tone.

"You think it imprudent then to keep so much money with me?"

"In a house open to all comers, and filled with individuals who are not always of the most scrupulous honesty, who only come to go away again,—faith, I would almost as willingly lay my money on the side walk, and trust it to public probity."

"If it is so, you must assist me," said the substitute.

Blondel involuntarily threw down his eyes, while a feeble color changed the livid complexion of his cheek.

"I will keep one or two thousand francs for my expenses," resumed Deslandes, "and you will do me the favor to lock up the rest in your desk,—it will be safe there."

This spontaneous confidence, going before the proposition which the gambler hesitated to make, awoke in his soul, notwithstanding his habitual degradation, a feeling of remorse which the torch of honesty sometimes flashes upon the heart of the guilty, the moment before its light is quenched—a light clear enough to display vice and its ugliness, but too feeble for virtue to be enkindled by it.

"A deposit," said Blondel with an agitated voice, "I confess to you that I would rather you should ask some one else. It is always disagreeable to have money in one's house, which does not belong to him, and for which he is answerable."

"You cannot refuse me this service," replied Deslandes with vivacity. "You know that with the exception of yourself, I know no one in Paris in whom I can place any confidence. After what you have told me, and I think your remarks are just, my money is not very secure here."

"I think so."

"You do not wish to have me robbed?"

"Certainly not."

"Ah well, then do as I ask you," resumed the substitute, and he presented the pocket book to his friend, after having taken out two bills.

"Since you desire it," said Blondel, who, finding in his possession the sum of fifteen thousand francs, felt suddenly the ardent thirst for play which all gamblers have who have lost their money.

I am sure, thought he, that my infernal luck must be over, and I must have good luck at the next turn. "You are in haste to finish your work," said he, aloud—"I will not disturb you, but take my leave. Adieu,—you dine with me to-morrow?"

"No, I dine with M. Piard," replied Deslandes, with an important air.

Blondel quitted his confiding friend, and returned, with a rapid step, towards the house which he had left two hours before, in as bad a case as the prodigal son. At the door he paused, and from a parting scruple tried to contend against his temptation. But the demon of play is very strong, and the virtue of the gambler was very weak.

If the vein is still against me, said he to himself, I swear I will risk but a thousand francs.

After having thus compromised with his conscience, he entered.

While, in spite of his oath, the faithless depository lost bill after bill, as a tree in autumn is stripped of its leaves, one by one, Deslandes, whose ardor had not abated for a moment, put the finishing stroke to his work, for which, as he read it over, he felt a sort of enthusiasm.

If M. Piard expects apprentices' work, thought he, I fancy here is something which will make him change his opinion.

The next day the young magistrate went to the house of his patron, sometime before the dinner hour. With a modest air he returned him the paquet tied with the rose colored ribbon, swelled with the report which he had passed a part of the night in copying in his most beautiful hand.

"You are exact," said the counsellor of state to him. "In business this is an important quality. We have near an hour before us,—read me your work—I will tell you frankly what I think of it."

Deslandes obeyed at first with an involuntary timidity, but gradually gaining his equilibrium, and at last pronouncing as boldly as if he had been in court. M. Piard listened to this reading with the grave and impassive air of a pedagogue who is hearing his pupil's lesson. Twice he interrupted the substitute, by going to his library for a book to verify some quotation. Having thus assured himself of the scrupulous exactness of the substitute, he could not prevent himself on the other hand from acknowledging the clearness, the elegance, the logic and the method, which even in the eyes of a severe judge had rendered the work of the young magistrate worthy of commendation.

I shall not have half a page to alter, said he to himself, well content with his economy of labor, but he took care not to manifest his secret satisfaction.

"It is not badly done," said he to Deslandes, when the latter had turned over the last leaf, "it is even better than I had hoped. It is plain you have studied the subject—your researches are conscientiously made, and the whole fails, neither in the connection, nor the justness of your views. This is for praise. As to criticism, your style is too full, too flourishing, too flowery. In a serious work, one should know how to renounce the *molle et facetum*. The manner of Daguesau is better for pleading than reports, which require nothing so much as precision and clearness. Half of your labor could have been spared without inconvenience. That is a fault ;

"Omne supervacuum pleno de pectore manat."

Horace says : all which is superfluous is bad. Guard, then, against a redundancy of words, which rarely indicates an abundance of ideas. In what you have read to me, there are parts very well done, but I repeat,

the whole is prolix, languishing—it smells of the province. However, as it is a beginning, I am well content with it, and I have no doubt you will do better another time. Here,” continued M. Piard, stretching his hand toward the desk from which he took another packet quite as large as the first, “here is a very different affair from the one you have had in hand; it is a case between the prefecture of the Seine and a company of speculators. Study it, and reduce it into a report, profiting by the advice I have just given you.”

Disconcerted to receive, instead of the compliments which he expected, an encouragement so small and so mingled with criticism, Deslandes took the bundle of papers, attempting to smile. He found it much more heavy than the first, and this time he thought he perceived something of the soporific perfume which he had formerly discovered in the air of his court room, and which had made him yawn so often in past times.

To be sure this pedantic master thinks I am going to forge out all his reports for him, one after another, thought he, glancing an evil eye toward the desk, covered with bundles of papers; this will be very amusing. He does not love the *molle et facetum*! Is not this a very pretty criticism! If my style has elegance and grace, shall I make it dry and flat to please him. To suit his taste I should have to write *en patois*!

This is the first solicitor I have ever met with, thought, at the same moment, the counsellor, from whom any thing was to be gained; he is a real treasure; I will make him my secretary, without salary; he will prepare my reports and spare me the tiresome labor of researches; besides, it is for his interest more than mine—he ought certainly to get the run of affairs.

The successive arrival of the guests interrupted the tête-à-tête of the two speakers, who passed from the study of M. Piard into the saloon.

Understanding the necessity of appearing amiable, the substitute succeeded in conquering his ill humor. He omitted no occasion of approaching Isaura, who, recollecting the ten tickets for the Polish subscription, received him with marked kindness. Deslandes, whose self love sought some reward for the disappointment he had just suffered, allowed himself easily to exaggerate the importance of such a reception. Distinguished, as he supposed, by a woman of a superior merit, he felt his desire to please her redouble. He brought forward therefore all his arts of pleasing. At table he cut neatly a turkey *de Périgueux*, without drawing from the cavity of the animal more than half of the treasured truffle with which it was stuffed, a talent and mark of prudence, which could not fail to be appreciated by a mistress of a house. In the saloon he joined in conversation with an abundant vivacity, which made the deputy of the left centre rub his brows more than once, he feeling himself threatened with a total eclipse. He showed himself lively, caustic and profound, often tried to be witty, and sometimes succeeded, obtained, in a word, that success, which, in the absence of a piano and a whist table, makes a man of importance from ten o'clock in the evening until midnight, but which no one remembers the next day.

Returning to his apartment, his cloak made heavy by number two, Deslandes examined his conscience and found himself, not in love with Mad. Piard, but decided to become so. The reverse of most of the affections, which spring up without our knowledge, and are only known when they arrive at a certain age, the passion of the substitute anticipated its own existence, and was observed itself before its bloom. It is a great deal when love has one motive—his had two: first, utility; was it not evident that to please his patroness was the best way to make her favorable to him. Then came the appetite of a heart famished by the longest sentimental fast that a young man of twenty-seven can submit to. In the midst of a population of provincial ladies who were ugly or demure, virtuous or prudish, but for the most part as rebellious to tenderness as the Roman vestals, or the nymphs of Diana, the young magistrate had repressed all romance of feeling, which would have hurt his reputation without procuring him any benefit. He found himself wonderfully prepared by repose, for the lively emotions for which he had so often wished in the midst of his monotonous existence. In this inflammable state, which the dreams of ambition had not entirely cooled, Deslandes would of course be smitten by the first amiable woman who deigned to show him the smallest of those attentions, which masculine presumption is so ready to metamorphose into encouragement. By a chance which at first seemed fortunate, he found that Mad. Piard, who was still young, intelligent, beautiful, and powerful at the same time, united all the qualities proper to satisfy ambition and flatter vanity, two motives which had equal power over the mind of the substitute. Half from calculation and half from attraction, Deslandes declared himself in love, which is a great step on the road to being really so. As he went to bed he felt in some doubt respecting this sudden passion, but on awaking he thought seriously of it, so true it is that night acts as a counsellor.

BIRTHS, DEATHS AND MARRIAGES.

A new and more efficient system, for obtaining an accurate registration of births, deaths, and marriages, has been lately adopted in England, the whole of which is placed under the superintendence of a Register-General. The second annual report of this officer, Mr. T. H. Lister, embracing the year ending June 30, 1839, has been just published among the parliamentary papers. As it is a document probably more authentic and exact, in its details, than any thing of the kind which has been before published in England, embracing so wide a scope, it must be regarded with a high degree of interest. We give the following extract from it, embracing some of its most curious details.

To the Marquis of Normanby, Her Majesty's Principal Secretary of State for the Home Department.

GENERAL REGISTER-OFFICE, June, 1840.

My Lord,—In submitting to your Lordship a general abstract of the number of births, deaths, and marriages, registered during the year ending June 30, 1839, in order that the same may be laid before Parliament, I will offer a few observations upon the results so exhibited, and the progress and state of registration during the period above mentioned.

I will first state the general results, and compare them with those of the preceding year.

The numbers registered in the year ending June 30, 1839, were—

Births,	-	-	-	-	-	-	480,540
Deaths,	-	-	-	-	-	-	331,007
Marriages,	-	-	-	-	-	-	121,083

which, compared with the numbers for the preceding year, show, for births, an increase of 80,828; for deaths, a decrease of 4,949; for marriages, an increase of 9,602.

The increase of the number of registered births results from the continuance of that success which began to be exhibited in the third and fourth quarters of the first year of registration, and was adverted to in my first report—a success which, as before, I attribute mainly to the diffusion of a true knowledge of the beneficial tendencies of the measure, and to the diligence and intelligence of the local officers by whom it is carried into execution.

A registration of births has thus been effected for the second year of registration, approaching much nearer to a complete record of the whole number born than was afforded by the registers of baptisms for the ten years ending 1830, the latest period at which we possess authentic returns with respect to such registers. The mean annual number of registered baptisms during that period, was 375,349; and if it be assumed that the number of such registered baptisms has increased in the same ratio in which the population increased from 1820 to 1830, it will appear that the probable number registered in the parochial registers for the year ending June 30, 1839, will not have exceeded 460,000, a number less than that of the number of registered births for the same period by more than 20,000.

I have the satisfaction of being able to ascribe the decrease of registered deaths, compared with those of the preceding year, not to imperfect registration, but to a diminished mortality. I have found no reason to believe that the registration of deaths has been conducted with less care and efficiency than before; but in comparing recent returns of the causes of death with those of the first year of registration, I have found reason to believe that the mortality of that year was above the average, owing to the inclemency of the winter in the beginning of the year 1838, and to some epidemics, the prevalence and severity of which appear to have subsequently declined.

It is impossible, at present, to do more than approximate to a solution of the important question—What is the proportion of the mortality to

the population of England and Wales? The only data for arriving at an estimate of the population for the year ending June, 1839, are the returns of 1821 and 1831. Taking the enumerations then given—adding the Scilly Isles, which were omitted in 1821, adding for the army, navy and other unenumerated population, according to the statements prefixed to those returns, such proportions as may be assumed to have belonged at these periods respectively to England and Wales—the numbers will be as follows:—

1821	-	-	-	-	-	-	-	12,162,056
1831	-	-	-	-	-	-	-	14,055,562

These numbers include all who may be assumed to have incurred the risk of death within England and Wales at those periods, and whose deaths might have been registered, if an act similar to the present had then been in operation, all of whom were not included in adverting to those returns in my report of last year.

With these corrections, and on the assumption that the rate of increase since 1831 has been the same as from 1821 to 1831, the population of whom the deaths might have been registered, may be estimated to have been nearly as follows, at the middle of each of the two first years of registration under the present law:—

	Males.	Females.	Total.
January 1, 1838, - - -	7,612,967	7,828,768	15,441,735
January 1, 1839, - - -	7,723,924	7,942,876	15,666,800

The deaths registered in the years of which the above mentioned periods are the middle terms were—

	Males.	Females.	Total.
Year ending June 30, 1838, -	170,965	164,991	335,956
Year ending June 30, 1839, -	169,112	161,895	331,007

Without correction for omissions, this would show the mortality to have been as follows:—

	Males.	Females.	Total.
1837-8 - - - - -	1 in 44.5	1 in 47.5	1 in 46.
1838-9 - - - - -	1 in 45.7	1 in 49	1 in 47.3

Mean of the two years, - - - 1 in 45.1 1 in 48.2 1 in 46.6

Assuming that the population may be estimated as above, and that it is unnecessary to allow a greater correction than 2 per cent. for omission in the registration of deaths, the mean mortality of the two sexes for those two years will have been about 1 in 46.

In explanation of the great increase in the number of registered marriages over those of the preceding year, I beg leave to refer to my first report, wherein I stated that the number there recorded was probably deficient; that it was less by 4,627 than the number estimated by Mr. Finlaison in his letter of Feb. 2, 1839; and that the deficiency was attributable to the great additional number of marriages, which, as I had been credibly informed, were, under a misapprehension of the object and effect of the recent Act for Marriages, solemnized immediately before that act came into operation. The increase now exhibited con-

firms the opinion then expressed—that the number returned in the first year could not be regarded as a proper average.

In considering in what manner the records deposited in this office may be rendered useful in illustrating the condition of the people, I have found the registers of marriages calculated to throw much light upon the state of education with respect to writing among the adult population of England and Wales.

Almost every marriage is duly registered, and every register of marriage is signed by the parties married, those who are able writing their names, and those who are unable, or who write very imperfectly, making their marks. Therefore, an enumeration of the instances in which the mark has been made will show the proportion among those married who either cannot write at all, or write very imperfectly.

It may be said in recommendation of this criterion that it is free from the disadvantage of selection, including alike every class and condition, and every age, except children and very old persons. It must at the same time be remembered, that although a fair average is thus afforded, the portion of the whole population exhibited in the yearly returns of marriages is small. It appears that there are usually about seven or eight marriages to every 1,000 of the population. If, therefore, it be assumed that the persons between the ages of 18 and 65 constitute half the population, (which the enumeration of age in 1821 shows to be very nearly the case,) it will follow that of those who may be considered the marriageable portion of the community, about 30 in every thousand, (or three per cent.) are married yearly. The portion, therefore, whose signatures appear on the marriage registers for a single year is sufficiently small to be easily affected by accidental circumstances; and it cannot safely be asserted that the 30 in 1,000, from whose signatures we would draw an inference respecting the other 970, may not happen to consist of more than the proportionate number of uneducated persons. It must not, therefore, be hastily assumed, upon the evidence afforded by the returns of a single year, that the inhabitants of any particular county or district are less educated than their neighbors. The experiment must be repeated often, and be attended with similar results, before this inference can be drawn with safety; and it is only when returns of the same description, given for several successive years, shall have exhibited similar facts, that it will be perfectly justifiable to arrive at any unfavorable conclusion with respect to any particular district.

It is obvious that this criterion gives no insight into the amount and nature of the education now afforded. It can be applicable only to the past, and particularly to such as existed between 10 and 20 years ago. It is confined to the signatures of persons married, and is not extended to those of witnesses in the marriage registers, or of informants in the registers of births or of deaths, and for this reason, that the signatures of persons married are entirely free from the objection of being selected instances, and that it is almost impossible that the same person should have signed twice in the same year; whereas the informants are in some degree selected persons, and the signature of the same informant is liable to occur many times.

Inability to write is, without doubt, indicative of considerable deficiency in other kinds of elementary education. Opinions will differ as to the extent to which such deficiency may thence be inferred; and this is a question, the solution of which I will not now attempt.

[Here follows a table of the counties of England and Wales, with columns of figures, indicating the proportion per cent. in the metropolis, and in each county, of persons married, in the year ending June 30, 1839, both men and women, who signed *with marks*, instead of writing their names. These counties are classified according to their geographical position, and we here give only the average, in each of the districts in which the counties are classed.]

					Proportion per cent. who signed with marks.		
					Men.	Women.	Mean.
1.	The Metropolis,	-	-	-	12	24	18
2.	5 South-eastern counties,	-	-	-	32	40	36
3.	8 South Midland counties,	-	-	-	43	53	48
4.	3 Eastern counties,	-	-	-	45	52	48
5.	5 South-western counties,	-	-	-	31	47	39
6.	6 Western counties,	-	-	-	40	54	47
7.	5 South Midland counties,	-	-	-	32	50	41
8.	2 North-western counties,	-	-	-	39	63	51
9.	Yorkshire,	-	-	-	34	49	41
10.	4 Northern counties,	-	-	-	21	42	31
11.	Monmouthshire and Wales,	-	-	-	48	70	59
Total average of England and Wales,					33	49	41]

It appears from the foregoing table, that in 15 English counties, and in North and South Wales, more than 40 per cent. of the men were unable to write their names; and in 19 English counties, in the West Riding of Yorkshire, and in Wales, more than half the women were similarly deficient; and it will appear from the subjoined abstract of marriages, that in the whole of England and Wales, out of 121,083 couples married, there were 40,587 men and 58,959 women who could not write.

It is to be observed, that the education of the men in this respect appears to be superior to that of the women, the proportions per cent. of those who were deficient being respectively 33 and 49 for the whole kingdom, and a superiority being maintained by the men throughout every county.

It will be observed that this return indicates a decided superiority with regard to education in the metropolis as compared with the rest of England and Wales, and, next to the metropolis, in the north of England: and that the principal deficiency is in Lancashire, Bedfordshire, Monmouthshire and Wales. But, as I have before observed, the comparative superiority or inferiority of particular portions of the kingdom must not be hastily inferred from the returns of a single year.

I have included in the abstract of marriages the numbers married under 21 years of age, which are 5,628 men, and 16,414 women; be-

ing in proportion to the whole number of each sex married in the same year 4.64 per cent. and 13.55 per cent. respectively.

The counties in which early marriages have appeared to prevail are those of Hertford, Bedford, Cambridge, Huntingdon, Northampton, Leicester, and Essex. They have occurred least in the metropolis, in the northern counties, and in Wales.

The average age at which persons are married in England and Wales, has never yet been ascertained, nor do the returns deposited in this office enable me to do so with certainty; for the column headed "Age" in the register of marriages is required to be filled, not by the actual ages of the parties married, but only by a statement whether each is of full age or a minor. There was, however, considerable misapprehension on this subject, notwithstanding my endeavours to circulate information, when the recent Registration and Marriage Acts first came into operation; and it appeared, on the reception of the quarterly returns of certified copies, that in many districts the precise ages of the parties married had been uniformly inserted. This being the case, and as the information is of a novel kind, I subjoin the result of an examination of the recorded ages in 4,858 marriages, which, as they are not selected instances, but belong to districts varying greatly in situation and character, and included every marriage in such districts, thus comprising persons of every class, may be presumed to be a fair example of the ages at which marriages occur throughout the whole kingdom. The result of calculations founded on this abstract shows that the average age of marriage was, for men, about 27 years, for women, 25 years and a few months.

<i>Ages.</i>				<i>Men.</i>	<i>Women.</i>
15 and under	20	-	-	159	688
20	" 25	-	-	2,536	2,527
25	" 30	-	-	1,150	861
30	" 35	-	-	398	320
35	" 40	-	-	219	187
40	" 45	-	-	156	134
45	" 50	-	-	103	76
50	" 55	-	-	70	38
55	" 60	-	-	39	17
60	" 65	-	-	19	6
65	" 70	-	-	4	4
70	" 75	-	-	4	0
75	" 80	-	-	1	0
Totals,				4,858	4,858

[The following statements are made of the comparative mortality of different districts.]

I have appended to the abstracts of deaths a table similar to that appended to the abstracts of the preceding year, wherein each is reduced to a common denomination; and the proportion of deaths, at different ages, out of 1,000 registered deaths, is shown for each division, and for the whole kingdom. It is thus rendered easy to compare both different portions of the kingdom and the results of different years.

I will first notice the most remarkable diversities exhibited by the abstracts of the second year of registration, with respect to the different portions of the kingdom.

The most marked and serious difference is that which is observable between the mortality of rural districts and of large towns, as exemplified in the proportion of the deaths of children, and of persons dying at advanced ages. The mortality of children appears to have been greatest in towns; and among these towns respecting which I can exhibit separate returns, the greatest at Manchester, where it appears that out of every 1,000 deaths of males, 496 were of children under three years of age. The mean deaths of children under three years, in Manchester and Salford and suburbs, were 475 out of 1,000 deaths. In Leeds and its suburbs the proportion was 447; in Birmingham, 440; in Liverpool and West Derby, 437; while in Dorsetshire and Wiltshire it was 281; in Devonshire, 296; in the North Riding of Yorkshire, with Durham, (except the mining parts,) and the northern part of the West Riding, 282; and in the northern part of Lancashire, Westmoreland, Cumberland, and Northumberland, (except the mining portion of the latter,) not more than 253. In the whole of England and Wales the mean mortality under three years was 343 out of 1,000 deaths at all ages; and it is to be remarked that notwithstanding the comparative unhealthiness of towns, the proportion in the metropolis is still less—namely, 338.

Equally remarkable are the contrasts exhibited by the towns and rural districts with respect to the proportion of persons who appear to have died in old age. The proportion out of every 1,000 deaths which have been at the age of 70 and upwards has been, in Manchester, only 53; in Liverpool, 60; in Leeds, 68; in Birmingham, 78; in the metropolis, 99; while in the North Riding of Yorkshire, and the agricultural parts of Durham, it is 202; in Devonshire, 208; and in the north of Lancashire, Westmoreland, Cumberland, and Northumberland, not less than 210. In the whole of England and Wales the proportion, out of 1,000 deaths occurring at 70 and upwards, was 140.

Great also are the differences exhibited by the mining districts and the agricultural districts which surround them, with respect to mortality, both in childhood and in advanced age.

In the mining part of Staffordshire and Shropshire the mean deaths in 1,000, at all ages under three years, were 462; at 70 and upwards, only 90. In the rest of Staffordshire, Shropshire, and Cheshire, the proportion under 3 years was 332; at 70 and upwards, 141. In the mining parts of Northumberland and Durham, the proportion of deaths under 3 years of age, was 349; of deaths at 70 and upwards, 150; while in the surrounding agricultural districts, comprised in divisions 22 and 24, the proportions of deaths under 3, were only 282 and 252; and of deaths at 70 and upwards, 202 and 210.

Table of the Proportion of Deaths, under 1 and under 5 years of age, to 1,000 Births and 1,000 Deaths, in the Metropolis, in 10 groups of Counties, and in England and Wales.

MEAN OF THE MALES AND FEMALES.

	Died under 1 year.		Died under 5 years.	
	To 1,000 Registered Births.	To 1,000 Registered Deaths.	To 1,000 Registered Births.	To 1,000 Registered Deaths.
1. Metropolis, - - - - -	174	191	366	402
2. Surry, part of; Kent, part of; Sussex, } Hampshire, Berkshire, - - - }	120	183	213	325
3. Middlesex, part of; Hertfordshire, and } six neighboring counties, - - - }	145	229	229	361
4. Essex, Suffolk, Norfolk, - - - - -	149	206	248	344
5. Wiltshire, Dorsetshire, Devonshire, } Cornwall, Somersetshire, - - - }	119	191	221	356
6. Gloucestershire, Hertfordshire, and 4 } neighboring counties, - - - - }	151	229	254	387
7. Leicestershire, and 4 neighboring counties	149	245	233	383
8. Cheshire, Lancashire, - - - - -	187	257	354	485
9. Yorkshire, - - - - -	158	240	287	436
10. Durham and 3 northern counties, -	130	207	222	354
11. Monmouth and Wales, - - - - -	125	188	248	372
England and Wales, - - - - -	146	215	262	382

ATMOSPHERIC RAILWAY.

The public attention has been repeatedly called, for some years past, to successive experiments, which have been made in England, for carrying into practical operation an invention called the Atmospheric Railway. A company has been formed with a capital of £400,000, and an experimental railway on this principle, is now in operation in London. The principle, which is sufficiently simple, has not appeared to us to promise any useful practical result; yet those who are best acquainted with it, have deemed it an object to make a trial of the principle on a scale of considerable magnitude. Several of the London journals have lately announced that recent experiments justified the expectation of entire success, and in fact, that its claims are fully demonstrated. Experiments on a larger scale, will doubtless soon bring it to a decisive test. We confess we have no great faith in its eventual success, for reasons which it is unnecessary to explain. For the information of those who are unacquainted with the principle on which the invention rests, we copy the following brief description and history of it from the London Times.

"The experiments on the line of railroad which runs from the Uxbridge road, near Shepherd's-bush, across Wormwood Scrubs, to the line of the Great Western rail-road, and on which carriages are propelled by means of the atmosphere forcing its way into an exhausted

tube or pipe laid down between the rails, on the principle for which Messrs. Clegg and Samuda have obtained patents, have attracted considerable attention. The experiments were a few days ago attended by the Government commissioners, Sir Frederick Smith and Professor Barlow, who examined every part with the most minute attention, and witnessed the transit of the carriages along the line. Several of the most eminent engineers and practical men were also present, and expressed themselves perfectly satisfied with the results. The carriages travel at the rate of 30 miles an hour, apparently by magic. Those who have been accustomed to see the cumbrous locomotive engines roaring and smoking along the lines of railroad will be astonished to see a train moving with the rapidity of 30 miles an hour, without any perceptible power to put it in motion, and it is difficult to persuade many persons of the fact, that trains can be impelled by means so simple as those employed.

"The invention is not a recent novelty in the history of practical philosophy, but the manner in which it has been made subservient to the purposes of railroad conveyance is entirely the contrivance of the above mentioned patentees.

"In the year 1810, Mr. Medhurst put forth a proposition for constructing a tunnel from one end of a railroad to another, through which a carriage or carriages were to be propelled by means of a current of air generated by powerful air pumps worked by steam engines, and in 1817 a Mr. Lewis proposed a method upon a similar principle for conveying letters through a tube from London to Windsor in the space of a minute, and subsequently a Mr. Vallance proposed to convey a carriage through a tube, the carriage to be attached to a piston, upon which the influence of the exhaustion or rush of the atmosphere into vacuum was to act. Mr. Vallance had an interview with the Duke of Sussex on the subject, but the business of course came to nothing; his plan was little more than what the plans of Mr. Medhurst and Mr. Lewis had before suggested, but which in practice were not feasible. It was obvious that the propelling power must be confined in a tube or pipe, along which a piston must be propelled by means of exhaustion or pressure of air, and that this piston must be connected with the carriages by means of rods or bars of iron coming through some aperture in the pipe or tube, so that when the piston was forced along the inside of the tube, it should draw the carriage or carriages which were outside the tube along with it. But then arose the difficulty of contriving such an aperture for the transit of the connecting rods or bars, as should not destroy the vacuum within the tube by affording an opening for the rushing in of the external air in such places and in such a manner as to destroy the whole principle and power of the vacuum. A Mr. Pinkus thought he had effected this object: his method is said to have consisted in a pipe 40 inches in diameter with a slit or groove in the upper surface; the groove was to be closed by laying a rope in it, a piston was to move in the tube to which the rods or bars connecting it with the carriage were attached, wheels were attached to the bar or rod, which lifted up the rope as the piston passed beneath it, and then

came another wheel behind the bar or rod, which forced down the rope into its former place, after the passage of the bar had taken place. The defect here seems to have been, that the rope could not be sufficiently forced down so as to make the aperture air-tight. It seems that it was reserved for Messrs. Clegg and Samuda to contrive the effectual method of closing the aperture so as to make it air-tight after the passage of the connecting rods, and thus render the application of the vacuum principle of practical utility to railroad conveyance. Their contrivance is this:—A pipe of nine inches is used for the transit of the piston; along the top of it is an aperture. To close the aperture there is a strip of leather strengthened by plates of iron, fixed like a lid, by being attached on one side to the pipe, while the other side falls into a groove filled with a composition of oil and wax. Wheels are attached for opening and closing the valve, and, what is completely a new feature, a heated upper rod passes over the composition after the valve has been closed, melts the composition, soldering down the edge of the valve or lid to the groove, and sealing the tube. It will be seen from this description that the desideratum so long sought in vain—viz., the connecting the piston in the tube with the carriages above it in such a manner as to prevent the vacuum in the tube from being destroyed by the rush of external air—has been accomplished; and it will repay the trouble of any person interested in railroad conveyance to go to Wormwood Scrubs and witness the facility with which, by the application of the principle of a vacuum, the most heavy carriages are forced along. The method is an enormous saving of expense in railroad engineering, an increased speed is attained, and a variety of accidents avoided. The invention, like all others, will meet with opposition, and will have to contend with the prejudices and interests of a host of persons; but that it must ultimately, and at no very great distance of time, come into general operation, there can be little reason to doubt."

The *Railway Times* of Aug. 29, says, "Further experiments of the Atmospheric Railway took place on the West London line last Monday and Thursday, and were very numerous and influentially attended. Most persons present evinced a great desire to ride in the carriages, and on several occasions, the carriages were started up the incline, loaded with 100 passengers."

The following further description of the model railway at Wormwood Scrubs, which is half a mile in length, is given by the *London Railway Times*. It appears to be at best but a very awkward mode of applying the power of the stationary steam engine, which, so far as can be judged from this description, could be much more economically and efficiently applied by means of a rope.

"An air channel, consisting of a series of pipes about 9 inches in diameter, connected together by air-tight joints is laid down between the two lines of rail, on which the carriages travel, and at the top of this air channel, but rather to the one side, there is a small slit or opening, which is covered with a continuous leather valve, one edge of

which is fastened down and the other drops into a trough or groove filled with a composition of beeswax and tallow, which is solid at the ordinary temperature of the atmosphere, but is only very slightly adhesive, and becomes quite fluid when heated a few degrees above the temperature. As long as this valve remains fixed in its seat no access of air can of course take place through the slit or opening. A piston which works lengthwise in the air channel has a vertical arm, which takes into the slit, upon the leather valve which covers that slit being lifted, (which is easily effected by a little pressure,) and is connected with a driving carriage, placed on the rails outside in the usual way. The air channel is divided by separating valves into suitable lengths for exhaustion, and each length has a steam engine and air pump of its own to exhaust it. The inventors propose at first to try lengths of about a mile, but to increase or diminish the distance according as experience shall determine the one or the other course to be most economical. For the half mile on which they are now experimenting, one engine of 16 horse power is found amply sufficient. Supposing, then, one of the separating valves of a section of the air chamber—that behind the piston—to be opened, and the atmosphere freely admitted in that direction, while the valve at the opposite end is closed, and a steam engine and air pump applied to exhaust the air from the intermediate space, this result necessarily follows:—the piston is moved forward by the pressure of the atmosphere, and the vertical arm which rises from it, follows in the slit at top, forcing aside as it advances the leather valve, and drawing after it the driving carriage with which it is immediately connected. Close behind the vertical arm there comes a small wheel, which presses the leather valve down again as fast as the arm clears it; and after that wheel comes a heating iron, (heated from a small furnace in the driving carriage), which re-melts the beeswax and tallow, that had been broken up by the lifting of the valve, and makes the valve once more air-tight, and ready for a repetition of the preceding process by any succeeding carriage or train.

“Such is a general outline of the mode in which the progression of the carriage is effected; but there are a great many minor auxiliary contrivances, of which it is unnecessary to say more here, than that they are all exceedingly ingenious, and well adapted to the purposes for which they are employed.

“In two trips made on Monday last, the average speed realized was 30 miles an hour; in a third 36 miles, and in a fourth, when Prince Albert was present, no less than 40. The weight of the driving carriage and persons upon it, varied from three to eight tons.”

ALGIERS.

One of the most interesting acts of the great drama of events, now enacting on the eastern continent, is the war in Africa. The incidents of this war are important both from their connexion with the policy, and the commercial and military power of France, of which Algiers is a colony, and also from their influence on the future destiny of the population of Africa. It remains to be seen, in the results of the present war, in which the Emir Abd-el-Kader invokes the aid of all the followers of the prophet, to resist the progress of French dominion, whether this attempt to colonize the coast of Barbary, shall prove to be an effective step towards the civilization of Africa or not. To enable the reader of the narratives of current events in Africa to comprehend them, some further knowledge of the condition and topography of the country is requisite than falls to the lot of most persons. To obtain a satisfactory knowledge of the country a good map also is necessary. The maps which are accessible to most readers are of very little use for this purpose. We shall take an early opportunity to supply a better, and we only defer it in the expectation of being able to supply the deficiency more effectually than it can be done by the means which we have yet at hand. In the meantime the following description from a French journal, the *Semaphore* will serve to give a better idea of the geography than will be found in general works.

"We have found it advisable, in order to make our readers understand more readily the details we are now publishing, to give a description of the country about to become the scene of warfare in this remarkable struggle. The present duel—if duel it can be called—is really an interesting sight. It is civilization against barbarity; and the question to be solved is, whether the art of war, perfected as it now is, possessing all the resources of military traditions, experiments and observations, shall be foiled by a few savage tribes, having nothing in their favor but their courage, the velocity of their horses and the advantage of place. In this case the question is no longer the surmounting of an obstacle, or of bringing to a close a settled plan. The thing now to be done is to manœuvre over plains and mountains, and to find, in the inspiration of military science, wherewith to compensate for the unavoidable slowness in march of an organized army. The singular, and, perhaps, menacing silence of the marshal, may be owing to his being obliged to act without any respect to established regulations.

"The configuration of the country is as follows:—

At the present moment war prevails in the province of Algiers.—The province of Constantine is perfectly tranquil, and is even guarded by the natives. The province of Oran is in a state of great agitation; but it does not seem destined to become the principal seat of military operations for the present.

"The province of Algiers, to which the present plan of campaign is

most probably confined, possesses a coast 85 leagues in extent, terminated near Oran, on the west by the mouth of the Chiliff, and by the mouth of the Bouberrach on the east, near Dellys. Cherchell is about half way between these two extremities. Algiers is about 20 leagues from Cherchell, and about the same distance from Dellys. It is probably this reason which has induced the marshal to adopt Cherchell as the central point of his military operations.

"Three chains of mountains, parallel to each other, and to the coast, intersect the country from east to west. The chain nearest the coast is that of the smaller Atlas, which in its centre is about eight leagues distance, while its extremities extend to the mouths of the Chiliff and of Bouberrach.

"The space between this chain and the Mediterranean comprises several plains (the most important of which is the Mitidja,) separated from the coast by a few eminences called Sahel. It is on a part of the Sahel that Algiers stands.

"The second line of mountains (Djebel-Dira, Djebel-Ghesoul,) is distant from the first from ten to thirty leagues, while further to the south, and at a distance of forty leagues, is the Great Atlas (or Djebel-Dyris,) beyond which Ain-Madhi and Biscarra, on the confines of the Great Desert.

"Thus, the province of Algiers comprises three great divisions; the first, from the smaller Atlas to the sea; the second, from the smaller Atlas to the second chain; and the third, from the second chain to the great Atlas.

"The country from the sea to the smaller Atlas has hitherto been the only part occupied by the French, with the exception of a few points near Medeah and elsewhere. Our position there has constantly been an unfavorable one, for the Arabs had the facility of concealing themselves in the passes of the Atlas, from which they descended rapidly towards the sea, and were always able to escape by the mountains into the second plain, where they could not be successfully pursued by our troops.

"The space between the first and second chain of the Atlas does not present the same inconvenience, and may be called the strategical field of Algeria. The two chains run in the same direction, but not at equal distances. Behind Algiers they are separated but by a distance of ten leagues at most, and connected by two perpendicular chains; the one formed of mountains adjoining Medeah and Tittery, the others, being the Bibans, run afterwards towards the coast, and there take the name of Jurgera. But with the exception of this square, which forms the vale of Hamza, the whole country consists of two vales, of which the easterly one, or the vale of the Adouze, bears the names of Zaouch, Nasabath and Summah, and terminates at Bongia; while the westerly one, which is the fine vale of Chiliff, extends from the great Atlas to the limits of the province of Oran.

"This vale has ever been the favorite seat of Abd-el-Kader, who, of late, appears to have centred there all his military stores, principally at Tadekempts, which is at the farthest extremity.

"Medeah and Miliana are seated at the beginning of the vale, on the southern side of the smaller Atlas, and command at the same time the territory of Algiers, and the lower course of the Chiliff. Abd-el-Kader has just concentrated his principal forces in the town above mentioned.

"We have already said that this vale was the strategical field intended by the marshal for the seat of war, and the reason of its being so is clear. The country is rich, vast and populous; it has constantly been the refuge of the tribes we have pursued, and it must be owned that it would have been useless to follow them, had the expedition been less formidable than it is. The plains beyond the second Atlas are arid and desert, and moreover they are secured by Abd-el-Kader's enemies, (Tedjini, of Ain-Madhi, and Ben Gannah, the late sender of 100 pair of ears). Thus the Emir has nothing to do in that part of the country.

"He is similarly situated with respect to the province of Constantine, which he can only enter by the Iron Gates, where he certainly will not venture, were it solely for the difficulty of leaving Mejana.—There consequently remain but the northern and western sides.

"The rapidity of the marshal's movement towards Milaire induces us to believe that his intention has been to advance suddenly on the Chiliff, leaving behind him Teniah and Medeah, in order to take possession of the only bridge over the river, and thereby cut off all communication between the Emir and the province of Oran, and at the same time protect the western side. It is true, and it is this which causes the lamentations of the Algiers colonists, by his doing so he leaves the shore and the Metidja, which forms the fourth side of Abd-el-Kader's position, without any active troops to oppose an attack, but if the marshal has given up all idea of being supported by his camps, and has left them in a state of suitable defence, we see no reasons for these lamentations. It is useless to speak of Algiers, which is so strongly fortified on all sides that an inroad of the Arabs can offer no danger. We must also remark that at the very opening of the campaign the camp at Arba, which closed one of the passes of the smaller Atlas was ordered to be evacuated as if the marshal had intentionally opened a road for the Arabs to penetrate into the plain of the Mitidja.

"It is certainly difficult to form any precise conjecture on what is to take place, but from the connection of all we have related it is impossible not to infer that some important operations are about to be effected, and which are likely to produce a far different result from that attained by the partial expeditions which have hitherto been made. There is also reason to believe that the general-in-chief has profited by all the advantages arising from the season, and the leisure he has enjoyed to prepare our auxiliaries of the desert for certain eventualities and to make divisions of troops to converge from Constantine and Oran, under certain circumstances, towards points where they will be able to take a part in the operations of the principal army.

"This singular campaign, the first which has been at all conducted on strategical principles, will be followed with great interest, and still

more so, on account of its tendency towards realizing a plan at which the marshal seems to have been aiming for the last two years—viz., the diminution of Algeria by the occupation of the valleys between the two first chains of the Atlas. A number of fortified points, commencing at Bona and passing on to Ghelma, Medjers-Ammars, Constantine, and Setif, controls, or rather protects and attaches all the adjoining tribes. The same system, if adopted from the Haurza, by Medeah and Miliana, to the province of Oran, would put an end to the turbulent spirit of the tribes by the fear of immediate punishment. In other words, would not permanent forts, by the facility they would afford for excursions on all sides, be an excellent combination of tactics for a country like Algiers?"

CHRONOLOGY.

Aug. 6. Louis Napoleon Bonaparte, with 56 followers, among whom were Gen. Moutholon, and several other former officers of the French army, having chartered an English steamer, called the *City of Edinburgh*, ostensibly for a pleasure excursion, landed at Boulogne, in France, and attempted to surprise the garrison of that place, and to induce them to declare him Emperor of France. The troops, true to their allegiance, had no thought of doing so foolish a thing, and Louis and all his followers, except those who lost their lives in an attempt to escape, were made prisoners. The adventurer had prepared for distribution two proclamations, one addressed to the French nation, and the other to the army. He had also prepared for publication a decree, for a provisional organization of the government, in which he declared that the Orleans dynasty had ceased—that the Chambers of Peers and Deputies were dissolved, that a National Congress should be convoked on his arrival at Paris—that M. Thiers, the president of the Council, was appointed President of the provisional government at Paris, Marshal Clausel, commander of the troops at Paris—and various other matters were decreed, for installing himself as the successor of the Emperor Napoleon. The failure was as sudden and complete, as the enterprise was criminal and foolish. The prisoners were conveyed to Paris, and the young adventurer, with fifteen of his followers, are to be brought to trial before the Chamber of Peers. This is the second attempt of this ambitious young man, the first having failed as signally a few years since at Strasburgh.

London, Aug. 10. An order of the Queen in Council was issued, authorizing the Governor General of the Provinces of Upper and Lower Canada, in pursuance of the recent act of Parliament, to declare by proclamation that the said provinces "upon, from, and after a certain day, in such proclamation to be appointed," shall join and be one province under the name of the Province of Canada. The day to be thus appointed must be within fifteen months from and after the date of the passing of the act, [23d of July, vid. Mon. Chron. p. 308.] The proclamation is not yet issued, but authority is granted in the above-mentioned order in council, to Lord John Russell the Secretary for the Colonial Department, to give the necessary directions. The proclamation is probably delayed, as was intended by the act of Parliament, to enable the Governor General, with the aid of his present Council, which is possessed of legislative powers, in the lower province, to make the necessary preliminary arrangements for the union.

London, Aug. 11. The British Parliament was prorogued to the 8th of October, by a speech from the throne, by the Queen in person. The proceedings of the session were not of very great interest. The leading measures of the session were the Regency bill, the Canada Union bill, the Irish Municipal Corporation bill, the Canada Clergy Reserve bill, and the Ecclesiastical Duties, and Revenue bill.

London, Aug. 13. The bill establishing a system of supervision over the railway companies has passed the House of Lords, and become the law of the land.

precisely as it was sent up by the House of Commons.

It is in the first instance provided that true copies of all by-laws, rules, and regulations already made by the railway companies, shall be furnished to the Board of Trade within two calendar months after the passing of the act, otherwise they cease to have any legal force. Secondly, no future by-laws shall, without special permission, be valid or have force until two months after they have been submitted to the Board of Trade. Thirdly, the Board of Trade have a general power of disallowing all by-laws at their discretion, and by their certificate to authorize the prosecution of the companies by the Attorney General of England and Ireland, and the Lord Advocate of Scotland, to enforce the provisions of the act, or any of the railway acts, any breach of which they may consider injurious to the public interest.

Aug. 20. **THE DUTCH NAVY.**—The *Observateur* of Brussels gives the following account of the navy of Holland:—"The navy in commission is composed of 9 frigates, of which 3 are used as guard-ships; 9 corvettes, 1 of which is used as a naval school; 12 brigs, 1 of which is used also as a naval school; 25 gun-sloops, 4 armed steamers, 2 transports, and a demonstration-ship attached to the naval institution of Medemblick. The vessels not in commission are 8 ships of the line, of which 5 are finished, and 3 building; 12 frigates, of which 5 are finished, and 7 are building; 9 corvettes, of which 4 are finished, 2 are building, and 3 are employed as hospital ships; 9 brigs, of which 4 are finished, and 5 are building; and 68 gun-boats. The total, therefore, is 8 ships of the line, 21 frigates, 15 corvettes, 21 brigs, and 95 gun-boats. The crews in active service amount to 5,000 men; the officers of the fleet are 472 in number. The number of marines in the different ports is 383. The shipwrights and others employed in building and fitting out at Amsterdam, Willemvord, Rotterdam, Helvoetsluys, and Flushing, amount to 2,098. The budget of the navy is 5,250,000 Dutch florins (437,000*l.*) The Dutch have not one three-decker, and their largest ships of the line are of 84 guns. The officers are composed of 3 vice-admirals, 7 rear-admirals, 23 full-captains, 40 lieutenant-captains, 82 full-lieutenants, 172 lieutenants of the second class, 79 midshipmen, and 66 surgeons."

Aug. 22. **THE SILK MANUFACTURE.**—The *Courrier de Lyons* states, that the silk manufacturers of Lyons consume

2,000,000 lbs. of silk annually. It requires 4,292,400,000 silk worms to produce this quantity of silk. Each silk-worm produces about 500 yards of silk thread, and the total length of all the silk produced is equal to 14 times the distance of the earth to the sun, and 5,414 times that of the earth to the moon. It is likewise equal to 52,505 times the circumference of the earth at the equator, and 200,000 times the circumference of the moon.

STEAM TRAVELLING EXTRAORDINARY.—Leicester, Eng., Aug. 24.—About half past twelve o'clock this day, a train, the longest, perhaps, ever known, came along the Midland Counties railway from Nottingham. It had four engines to drag it forward, and to the beholders appeared like a moving street, the houses of which were filled with human beings. The occasion of this extraordinary sight was a return visit made by the committee and friends of the Nottingham Mechanics' Exhibition to the Mechanics' Exhibition of this town. The number of carriages was 67, and the quantity of passengers nearly 3,000—most of whom were well and respectably attired. On the banks for a considerable distance, and also near to the station, tens of thousands of spectators had assembled to greet their arrival, and the scene altogether was one of the most imposing that can be conceived. The Duke of Rutland's excellent band was in attendance, and played an appropriate air as the train entered the Company's premises, and afterwards preceded the cavalcade that was formed to proceed to the New Hall, where the exhibition has been for some weeks opened. About seven o'clock the train set out on its return to Nottingham, when the crowd collected to witness their departure appeared quite as great as on their arrival.

Southampton, England, Sept. 1. The steam ship *Oriental*, the first of the new line of East India mail packets for Alexandria, started from this place to-day, and will call at Falmouth to take on board the mails. She got under weigh exactly at half past ten, and was saluted from the battery at the east end of the town, and cheered by a vast concourse of spectators. She returned the salute as she proceeded. She carries out about 60 cabin passengers, a detachment of the 77th regiment, a company of royal artillery, and a considerable amount of specie, and makes about £3,000 freight and passage money, exclusive of the sum paid by government for the mail service, which, it is said, is £38,000 per annum. The contract with the *Oriental* company for the service, (which has been

printed,) is for a term of six years certain, and to continue further, until either of the contracting parties gives the other twelve months' notice to discontinue it. The Oriental was visited on Saturday by the Earl of Minto, (First Lord of the Admiralty,) accompanied by Sir Chas. Adam, Sir William Parker, Sir E. Codrington, (commander-in-chief at Portsmouth,) Sir Wm. Symonds, (surveyor of the navy,) and Captain Brandreth, (civil architect,) who all expressed their entire satisfaction with the vessel and her equipments. She was found fully adapted to carry and fire four of the long 68 pounder swivel guns fore and aft, besides long 32 pounders as broadside guns, and may, therefore, in a few days, be made the most formidable war steamer in the world. The Oriental will start from Falmouth to-morrow, and is expected to reach Gibraltar on the evening of the 6th, and Malta on the evening of the 10th.

A French journal gives the following history of the establishment of this line of communication with India.

In 1825, a first attempt to proceed by steam from England to India was made, at a vast expense. The steamer *Enterprise* sailed from London, and arrived at Calcutta, in 113 days, by the Cape of Good Hope; but as sailing vessels performed the voyage in 120 or in 130, the trifling difference of time was not reckoned a sufficient compensation for the heavy expenses attending steam navigation, and the trial was not renewed.

Every eye in England was turned towards the Mediterranean, and public attention became directed towards the re-establishment of the ancient routes to the commerce of England, rendered practicable and easy by the employment of steamers.

A line drawn direct on the map from Bombay to London, is nearly 5,000 miles long, while in passing by the Cape of Good Hope, it amounts to 16,000 or 17,000 miles.

The opening of the first route promised immense advantages to trade, not only on account of its being two-thirds shorter, but also on account of its passing through countries rich in precious productions. The consular agents of England were constantly ordered to collect every information likely to throw any light on this important question, and Lord Valentia's voyage to the Red Sea was for the sole purpose of endeavouring to establish the navigation, of creating depots on the coast, or to take positions which have since been occupied.

Independent of the road by Suez and the Red Sea, the consular reports indicated another 300 miles shorter, and which appeared, if practicable, to deserve the preference. This was by the Orontes and Euphrates, which empties itself in the Persian Gulf; but this road, as little known as the other, presented physical difficulties which it became necessary to verify and discern.

In 1835, an expedition under the command of Colonel Cheeney, of the Royal Artillery, left Malta with the *George Caning*, having on board two iron steamers, the *Tiger* and the *Euphrates*, with their rigging, &c. The expedition consisted of divers officers of merit, of picked seamen, and a detachment of marines. The party landed on the coast of Syria; the steamers were conveyed by camels a distance of 40 leagues, to the banks of the Euphrates, on which river they were launched when put together. This attempt met with divers disasters. While descending the river the *Tiger* perished; but it was ascertained that the navigation was practicable. At this very moment, another survey of the river is in hand.

It appears, nevertheless, certain that this road by the Euphrates, although very practicable, presents very great obstacles, owing to its passing through countries inhabited by a piratical and hostile population, with which contact is unavoidable, and on account of the river in its course joining the desert, and is in the very neighbourhood of these savage and marauding tribes.

A preference was, therefore, given to the road by Suez and the Red Sea. A service of steamers was established several years ago between Malta and Alexandria on one hand, and on the other between Malta, Gibraltar, Lisbon, and London.

Travellers on reaching Alexandria, thanks to the protection of the Viceroy, have nothing to fear for their persons or their goods, for he has constantly afforded them his Majestic protection. They ascend the Nile in djarms as far as Cairo, and in that city, as well as in Alexandria, the principal commercial houses and hotels are English. An English company has established a regular service of stages through the desert. In three days travellers reach Suez, and at night, and at every station, they find an inn, with almost every English comfort. Suez is a complete *comptoir*, or, more properly speaking, is a real English colony under the protection of the Pacha. One half of the inhabitants consists of English sur-

rounded by their Indian or Malay dependents and servants. They have their counting-house, house, and warehouse; in a word, they have built a modern town in the desert; and the numerous steamers which arrive there from India, with passengers and merchandise, keep up a constant bustle. The desert itself, formerly so solitary, is almost animated by the constant passing of caravans laden with the treasures of Asia.

The road is now traced; the impulse once given it has naturally been increased, for nothing opposed an augmentation of activity and the erection of every establishment necessary for the development of the most extensive trade. The Viceroy had a real and direct interest in seeing its prosperity increase, and in seconding every reasonable desire; but the English Government not satisfied with these advantages, solicited a few years ago from the Pacha permission to erect a fort at Suez, in order to be able to protect British subjects and goods against aggression on the part of the Arabs, and also claimed similar permission in one of the towns situate at the mouth of the Nile, and thus was there some intention of joining these two towns by a rail-road. England thus wanted to have and keep the keys of the trade of the East, and probably would have even wanted to send her armies by the same road. The Viceroy refused to accede to these.

BRITISH AND FOREIGN POSTAGE. On the 1st of September a further Treasury warrant was issued in London, for fixing the postage to be paid on letters transmitted by the agency of the British Mail, through England, between one foreign country and another. It was announced that these rates were not intended to be permanent, but that they will be subject to great reduction as soon as corresponding reductions can be obtained from foreign powers. The following are a part of the rates established. The charge here stated is for letters weighing half an ounce. Letters exceeding that weight are charged double these rates, and so on.

FIRST SCHEDULE.

Between France and the countries and places hereinafter mentioned, that is to say—

	<i>s.</i>	<i>d.</i>
Spain,.....	2	2
British North America and United States of America,.....	1	0
Gibraltar,.....	1	6
Malta, Ionian Islands, Greece, Syria, Egypt and East Indies,.....	2	6
Portugal,.....	2	7

Madeira,.....	2	8
Brazil,.....	3	7
Buenos Ayres, Chili and Peru,....	3	6
Mexico, Columbia, and Cuba,.....	3	2
St. Domingo,.....	2	4
Jamaica and the West Indies,....	2	3

SECOND SCHEDULE.

Between Germany (*via* France,) or Holland, or Belgium, and the countries and places hereinafter mentioned, that is to say—

	<i>s.</i>	<i>d.</i>
Spain, (not <i>via</i> France,).....	3	6
British North America, and United States of America,.....	2	4
Gibraltar,.....	3	10
Malta, Ionian Islands, Greece, Syria, Egypt, and East Indies,.....	3	10
Portugal,.....	3	10
Madeira,.....	3	11
Brazil,.....	4	10
Buenos Ayres, Chili, and Peru,....	4	9
Mexico, Columbia, and Cuba,....	4	5
St. Domingo,.....	3	7
Jamaica and the West Indies,....	3	6

Sept. 2. BRITISH CENSUS OF 1841.—

By the act which recently received the royal assent for taking the decennial account of the population, several important improvements are ensured. The whole census is to be conducted by the Registrar-General and one or more commissioners, to be appointed for the purpose, who are to prepare the necessary forms, and direct and control the persons employed. In England, the registrars are to superintend the inquiry, and they will divide their districts into sections of a convenient size, appointing to each a qualified enumerator, who is to be approved of by the superintendent registrar. These enumerators are to take an account of the name, sex, and occupation of every person in their district, and to ascertain whether they were born in the parish or county; also of the houses inhabited, building, and uninhabited, distinguishing all places of religious worship, and these returns, when examined by the registrars and superintendent-registrars, are to be forwarded to the commissioners, for the purpose of arrangement and abstraction. The attempt at first proposed in the act to obtain a valuation of property is abandoned. It will be seen that there are many improvements in the new system, more particularly that the officers to be employed are all under one control, acting upon a uniform system, and qualified by their previous occupations, or selected for the duty. The returns can be checked and corrected; the abstracts will be made upon one well-digested system, and as the

original returns will be preserved, any further combination of particulars may be easily prepared.

Sept. 8. A Fair, established and conducted by the ladies of Boston, and a number of other towns in the state, and also of Norwich in Connecticut, and Brooklyn, in New York, for aiding the fund for the completion of the Bunker Hill Monument, was opened in Boston, at Quincy Hall, this day, and continued open for eight successive days. A great variety of choice and beautiful articles were offered for sale, all donations for this object, and in a great part the workmanship of the ladies themselves, embracing every variety of needlework, and articles of ornament. The sales were made, under the exclusive superintendence of the ladies, at more than 40 separate tables. The fair was visited by vast numbers, each visitor paying an admission fee of 25 cents, and purchases were made liberally. The net proceeds of the fair, after deducting all expenses, exceeded \$30,000.

Sept. 10. A very large convention of the Whig party, from all parts of Massachusetts, and a large number of members of the party, from nearly all the states in the Union, assembled in Boston, and after forming a procession on the Common, marched to Bunker Hill, where a meeting was organized by the appointment of Daniel Webster, President. The procession was about four miles in length. Proceedings were had in pursuance of the objects of the meeting, which were to aid the progress of the Whig cause, at the meeting, and various other public meetings in Boston. About 20,000 persons joined in the procession, besides whom vast numbers were assembled in the city, which was reported to have contained at this time, a greater number of strangers than on any former occasion.

Sept. 14. The annual election in Maine, for the choice of Governor, Senators, and Representatives, and also for the choice of Representatives in Congress took place this day. As far as can be determined by unofficial returns, it appears that the late Governor Kent is elected by a small majority, over the present Governor Fairfield; that there is a Whig majority in each branch of the legislature; that four whigs and two Van Buren men are chosen Representatives to Congress, and that in two Congressional districts, there is no choice. The result will not be officially known until January.

Sept. 16. This evening arrived at New York from Portsmouth, in a passage

of a little over 15 days, the steam ship British Queen, with 100 cabin passengers, and a large quantity of goods on freight.

Sept. 18. The steam ship Britannia arrived at Boston in 13½ days from Liverpool, by way of Halifax, bringing London papers to the afternoon of the 3d. Among the articles of political news received on this occasion were the note to Lord Palmerston to the French ambassador, written on the day of the signing of the quadruple treaty; the departure of Rifat Bey, the Turkish ambassador to Mehemet Ali, from Constantinople; and the sailing of the English and Austrian fleets in the Levant for the coast of Syria.

Sept. 27. The steam ship Great Western arrived at New York this afternoon, in 15 days from Bristol, bringing 54 passengers, and a valuable freight, including £100,000 in specie for the Bank of the United States. She brought accounts of serious disturbances among the workmen in Paris, which, however, were soon suppressed, and of a considerable fall in the French fund; also news from Canton to May 19, and from Singapore to June 9, the latter announcing the sailing of the British expedition for the China seas, from Singapore on the 30th of May. Accounts from Alexandria state that Rifat Bey, the Turkish ambassador had arrived there, and with the consuls of the four European allied powers, on the 17th of July, waited on Mehemet Ali, and notified him of the conclusion of the treaty of July 15. They also again waited on him on the 27th to learn his determination in relation to his acceptance of the conditions of the treaty, which he peremptorily declined acceding to.

ELECTRIC TELEGRAPH.—This extraordinary machine is now being worked on the great western rail-road, between Drayton and Paddington; and, though no distinct idea of the apparatus can be imparted without plans and draughts of the dial, pipes, rods, &c., of which it is composed, yet the principle will excite unqualified admiration when our readers learn that intelligence is conveyed at the rate of 200,000 miles per second, or 8,000 times quicker than light travels during the same period, by means of electrical currents passing through coils of copper wire, placed immediately behind some magnetic needles, made to operate upon a circular series of 20 letters, which indicate such terms, either separately or collectively, as they have been arranged to represent. This telegraph will act both day and night, in all states of the weather, and

with a rapidity so superior to the common process, that one minute only is required for the communication of thirty signals.

Halifax, Sept. 30. The Right Hon. Lucius Bentinck, Viscount Falkland, was sworn in, with the usual formalities, as Lieut. Governor of the Province of Nova Scotia, in place of Sir Colin Campbell, who is appointed Governor of the Island of Ceylon, and who this day resigned the government, preparatory to embarking for England in the steam ship Britannia. The command of the troops in Nova Scotia, as well as those in New Brunswick, devolves upon Maj. Gen. Sir John Harvey, Lieut. Gov. of New Brunswick, and the head quarters are to be transferred to Fredericton.

Sept. 30. The crop of cotton raised in the United States in the year 1839, and brought to the several ports of shipment from Oct. 1, 1839 to this day is estimated as follows.

Received at New Orleans, exclusive of 3,914 bales from Texas, and of the amount received from Mobile and Florida,

	940,905
At Natchez, exported direct,	6,767
At Mobile,	445,725
In Florida,	136,257
Georgia, of which Sea Island, 8,108 bales,	292,693
South Carolina, of which Sea Island, 19,310,	313,194
North Carolina,	9,394
Virginia,	26,900

Total crop of the year, 2,177,835
Crop of 1838, 1,360,532

Increase over the preceding year, 817,303

Of the above, the amount exported during the year was as follows :

	To foreign countries.	Coast-wise.	Remain- ing.
From N. Orleans,	832,625	124,061	27,911
Natchez, direct,	2,208	4,559	
Alabama,	354,708	85,394	1,737
Florida,	61,049	75,558	300
Georgia,	207,950	86,736	5,741
S. Carolina,	247,501	73,378	4,153
N. Carolina,	65	9,729	200
Virginia,	7,987	6,263	900
Baltimore,	2,501		
Philadelphia,	3,685		
New York,	152,216		
Boston,	3,508		

Total, 1,876,003 465,678 40,942
Exported from northern ports, . . . 161,910

Excess of receipts over exports, 303,768

Making allowance for imports of foreign cotton; for cotton destroyed; and for a less amount in northern ports than in Oct. 1, 1839, it is computed that the amount manufactured in the United States was 295,193 bales.

The exports were, to Great Britain, 1,246,791 bales; to France, 447,465; to the north of Europe, 103,232; to other foreign ports, 78,515. The amount of exports in the year ending Sept. 20, 1839, was 1,074,689 bales, increase in 1839-40, 871,314 bales.

The estimated growth of the year 1838, was 1,360,532 bales—1837, 1,801,497—1836, 1,422,930—1835, 1,725—1834, 1,254,328.

The estimated consumption of the year ending Sept. 30, 1839, was 276,018 bales; 1838, 246,063; 1837, 222,540; 1836, 236,732; 1835, 216,888.

VENEZUELA.—The republic of Venezuela, in South America, has just completed an accurate survey of its entire territory. This survey was conducted by Colonel Codassi, who consecrated ten years of unremitting labor to the task. The republic has been found to comprise no less than 35,000 square leagues of territory, the greater portion of which has been hitherto completely unknown. The results of this important survey are recorded in a map on a very extensive scale, and a general atlas, which are now being printed in Paris by an order of the Government of Venezuela, and which will complete our geographical knowledge of this portion of the continent of South America, remarkable alike by the variety and value of its natural productions, by its virgin forests, and its magnificent water-courses, amounting to 2,000 in number, and almost all navigable, the greater portion of them being absorbed by the immense Orinoko, which is navigable for a distance of more than 1,000 miles from its mouth. Colonel Codassi, assisted by MM. Diaz and Barral, has been charged by the same government with the task of publishing the political history of Venezuela from the period of its first discovery to the close of the war of independence, together with abundant statistical details, derived from the most authentic sources.